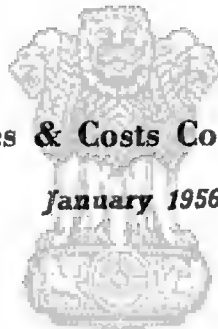


REPORT
of the
RATES & COSTS COMMITTEE

PART II

Rates & Costs Committee

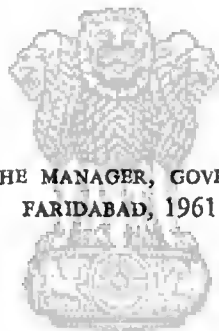
January 1956



सत्यमेव जयते

MINISTRY OF IRRIGATION AND POWER
CENTRAL WATER AND POWER COMMISSION

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नमो भगवते वासुदेवाय

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सत्यमेव जयते

REPORT OF THE RATES & COSTS COMMITTEE

Part II

नमो भगवते वासुदेवाय

CHAPTER 1

INTRODUCTION

1.1. Terms of Reference

1.1.1. The Government of India in the Ministry of Irrigation and Power letter No. DW-III-7(1), dated 16th February, 1954 sanctioned the appointment of a Committee for the following terms of reference :—

- (i) A comprehensive standard schedule of rates for manual as well as machinery works, which can be used as a basic schedule for all projects with such modifications as may be necessary for zonal consideration;
- (ii) Standard analysis of rates for the main items of River Valley Project estimates which would enable rates being worked out for any project with the help of the basic schedule, after allowing for differences in cost of carriage and other local factors involved;
- (iii) The causes which have led to the difference in rates at present prevalent on the various major projects (dams and canal works); and
- (iv) To examine the present P.W.D. forms with a view to suggesting modifications which would serve the purpose of better cost accounting on all river valley projects.

1.1.2. The Government of India in their Ministry of Irrigation and Power letter No. DW-III-22(108), dated 4th June, 1954 amplified the term of reference No. (iv) with the concurrence of the Comptroller and Auditor General under his D.O. No. 78-Adm. II/54, dated 27th April, 1954 to include—

- (a) Stock account rules to be adopted for both quantity and value accounts of stores for river valley projects;
- (b) Suitable forms for the maintenance of quantity and value accounts of stores;
- (c) The procedure for the maintenance of account of special T & P and machinery and the forms pertaining thereto; and
- (d) Rules for placing orders for stores, taking delivery from railway (or other carriages), carriage to godowns, bins and safe custody (including construction of godowns, bins and yards), employment of guards, physical verification, issues, etc. for the upkeep and custody of stores (including all tools and plant) to guard against thefts, shortages, etc., and to ensure fixing of responsibility therefor.

1.1.3. In so far as the terms of reference relating to the matters falling within Article 150 of the Constitution are concerned, the Committee was deemed to function for and under the Comptroller & Auditor General of India, *vide* Government of India, Ministry of Irrigation and Power letter No. DW-III-22(108), dated 4th June, 1954. Briefly these would be—

- (1) to make suggestions for the introduction of such subsidiary rules or accounts as would ensure more effective control over the costs of certain items of works, and
- (2) to suggest improvements, *inter alia*, in the system of store accounting.

1.1.4. Out of the above terms of reference nos. (i), (ii) and (iii) have been dealt with in Part I of the Report. The remaining terms are dealt with here.

1.2. Committee

1.2.1. Sarvashri P. C. Agarwal, I.S.E., Chief Engineer, (retired), U.P. (Chairman), Raunaq Lal, Deputy Chief Accounts Officer, Bhakra Nangal Project (Member), and G. G. Dhanak, now Superintending Engineer, T Construction Circle, P.W.D., Bombay (Member-Secretary) were appointed to the Committee on its formation.

1.2.2. Changes in the Personnel

Shri N. S. Sandhu, Executive Engineer, Stores Division, Bhakra Dam Project was appointed an additional member of the Committee in view of the extended scope of work. The Committee was further strengthened by the inclusion of two more members, namely, Shri B. D. Nanda, Consulting Engineer and Ex-Member-Secretary, D.V.C. Enquiry Committee and Shri M. R. Varadarajan, General Manager, Hindustan Construction Co., Ltd., Bombay, who joined the Committee on 18th June, 1954 and 18th July, 1954 respectively.

1.2.3. Shri G. G. Dhanak was recalled by Bombay Government to take up the duties of the Superintending Engineer, Tapi Construction Circle, Kakrapar, now at Surat, from 1st November, 1954 and was relieved by Shri B. D. Nanda, Shri Dhanak, however, continued to take interest in the work of the Committee.

1.2.4. Shri N. S. Sandhu returned to Bhakra Nangal Project from 31st December, 1954 and Shri Raunaq Lal proceeded on two months' leave for reasons of health from 10th January, 1955. He was replaced by Shri S. Ramier, Finance Officer, Ministry of Finance, Government of India.

1.2.5. This part comprises 7 Chapters and 6 Appendices as detailed below :—

Chapter 1 contains the Introduction.

Chapter 2 contains General Observations.

Chapter 3 deals with the General Rules relating to Central Workshops.

Chapter 4 deals with the Procurement, Management and Control of Stores.

Chapter 5 deals with Cost Control i.e. the methods for the correct preparation of estimates, cost accounting and watching the progress of work and the trend of rates.

Chapter 6 deals with the Recommendation regarding the Addition and Alterations to the Existing Forms and creation of new ones.

Chapter 7 contains a Summary of Recommendations and followed by

Appendix I relating to Bibliography.

Appendix II relating to Decimal System of Classification.

Appendix III relating to forms for Central Workshop.

Appendix IV relating to P.W.A. forms as amended and as proposed.

Appendix V relating to Time Keeping System.

Appendix VI containing a copy of the letter from the Railway Board regarding payment of railway freight by cheques.

CHAPTER 2 EXISTING CONDITIONS AND REMEDIES

General Observations

2.1.1. The Committee visited the accounts of a number of projects and the points noticed by it in regard to some of them are enumerated below :—

2.1.2. Bhakra Dam

- (i) Muster rolls on the project and daily labour account was being maintained through a system of time keeping.
- (ii) The accounts of materials issued to works were not complete.
- (iii) The total amount of the Suspense to end of February, 1954 was Rs. 1.32 crores, while the unresponded amount under Transfer between Public Works Officers stood at Rs. 6.94 crores.
- (iv) The register of works relating to the Bridge on the Olinda estimated at Rs. 16 lakhs was examined and found to be incomplete in respect of quantities and unit rates of work.
- (v) Verification of stores was largely in arrears.

2.1.3. Nangal Dam and Power House

The accounts were generally in arrears. Quantities of work and unit rates were found wanting in the registers of works.

2.1.4. Tungabhadra (Andhra)

The money limits of Rs. 2,000 and Rs. 20,000 prescribed in CPWA Code for each sub-head and major works respectively, had been raised to Rs. 3,000 and Rs. 50,000 respectively and their maintenance by sub-heads was also dispensed with for all major works completed before the 30th September, 1950. In spite of this the revised limit, postings in the registers of works by sub-heads were in arrear. The condition of the stores accounts was, however, satisfactory.

2.1.5. Tungabhadra (Hyderabad)

The register of works was incomplete as regards the posting of the estimated cost, expenditure on each sub-head, quantities of work and their unit rates. They showed only the total expenditure by the sanctioned estimates.

2.1.6. Maithon Project (Damodar Valley Corporation)

- (i) The work was being executed departmentally; working estimates by classes of work had not been sanctioned.
- (ii) The registers of works did not give the items of work, their quantities, nor were the quantities of work executed and the rates recorded.
- (iii) Figures produced by the Cost Engineering Section differed widely from those produced by the Accounts Section. A few examples are given below :—

Name of work	Item	Figures according to Cost Engineer (Rs.)	Figures according to Accounts Section (Rs.)
1. Earth dam	Borrow, Impervious	9,94,025	2,32,489
2. Spillway & sluices equipment	Excavation, Rock-open cut	10,45,293	Nil
3. Diversion channel	Excavation, common	6,48,687	16,14,840

- (iv) Suspense balances were heavy as would appear from the following figures to end of March 1954.

	Rs.
Machine Shop	16,64,621
Workshop	9,32,102
Misc. Advances	31,54,865
Purchases	26,32,102

- (v) Verification of materials was inadequate. Only 30% of the items had been verified. The "Material-at-site" account did not contain figures for the value of the materials.

2.1.7. Tilaiya

- (i) The register of works was posted as shown below, quantities and unit rates were not given.

Item of works	Estimated (Rs.)	Expenditure (Rs.)
1. Diversion and care of the river	4,50,000	4,93,435
2. Excavation of hard rock	5,20,000	4,79,050
3. Excavation of soft rock	1,62,800	1,38,090
4. Trimming of rock	1,90,000	1,79,064
5. Concrete, A Class	66,14,000	48,46,000

Columns for quantities and rates of work were blank; even the money columns had not been posted for the preceding six months.

2.1.8. The Hirakud Project

- (i) The registers of works were blank for the period prior to 1952-53.
(ii) Figures for expenditure relating to 1952-53 and 1953-54 were posted by heads of works in some cases and by sub-heads, in others. In no case, were the quantities of work done shown nor rates worked out, nor the progressive totals given.
(iii) The balances in the suspense account were heavy to end of March 1954, as would appear from the following figures.

	(Rs.)
Purchase Cr.	4,94,24,240
Stock Dr.	6,33,60,108
Misc. Advances Dr.	74,28,066
Workshop suspense Dr.	24,84,623
The total amount awaiting clearance works out to	<u>12,26,97,037</u>

2.2. The chief irregularities may be classified as follows :—

2.2.1. Rules for the maintenance of muster rolls were not observed in the following respects :—

- (i) The attendance in some projects did not seem to have been marked at the time of muster.

- (ii) Payments were unduly delayed.
- (iii) Large amounts were outstanding under Suspense head "Labour".
- (iv) Quantities of work done were not entered in Part III.
- 2.2.2. Verification and pricing of stores were in arrears.
- 2.2.3. Suspense balances were heavy.
- 2.2.4. Register of works did not show the items of works, their quantities and rates.
- 2.2.5. Proper analysis of rates for manual and mechanical works were not submitted with the estimates.
- 2.2.6. Detailed estimates had not been sanctioned in some projects and the revised estimates were not prepared on the prescribed forms, showing the quantities as estimated and executed and the reasons for the variations.
- 2.2.7. Material at site accounts were not properly maintained.
- 2.2.8. Stores accounts were not properly kept.
- 2.2.9. Account for equipment was not maintained properly.
- 2.2.10. Cost accounts were not maintained on most of the projects.

2.3. The Causes

2.3.1. The aforesaid irregularities could be ascribed to the following causes :—

2.3.2. Muster Roll

The muster roll at present is a record of muster of labour, their identification, attendance, outturn, disbursements, acknowledgements, payment of arrears and a record of the work on which it is employed. An overseer combines in him the functions of—

- (a) Employment officer.
- (b) Time-keeper.
- (c) Cashier and accountant.
- (d) Costing clerk.
- (e) Foreman incharge of work.

This system has worked very well on small projects, where each overseer employs only a handful of labourers but on large projects, where the labour strength runs into thousands, it breaks down completely due largely to the failure of a single man to perform such tedious and multifarious duties in strict accordance with the rules and he has perforce to resort to preparation of muster roll in office rather than in the field. Payments are unduly delayed and consequent evils also creep in.

2.3.3. Pricing and Verification of Stores

Section IV of Chapter VII of Central Public Works Account Code rules (126—132) deals with the maintenance of Half-yearly Register of Stock. It requires that all articles of stores should be priced afresh half-yearly according to the market rates, except in cases of important fluctuations which may necessitate immediate pricing of the store. The fundamental principle is that the stores should be priced within the market rate. It worked very well in times when the items of stores were few and simple and the transactions were fewer still. But due to the huge number of items of stores and transactions involved in the present-day stores on mechanised works, almost all the projects have failed to keep pace with the pricing work within the stipulated period. This has resulted in incorrect valuation and debits

to works after the prescribed date of closing of stock accounts. Due to the unsuitability of some of the present Central Public Works Accounts forms of stock accounts and the above cumbersome method, the work of pricing necessarily falls into arrears.

Further, due to the absence of a comprehensive system of classification of stores, transactions of several items of stores with only a slight difference in nomenclature get mixed up and issued at incorrect rates.

2.3.4. *Suspense Balances*

Large balances in Suspense account (Stock, Purchase, and Miscellaneous P.W. Advances, Workshop Suspense) were due principally to :—

- (i) Inordinate delays in payment of bills of suppliers. It is generally due to delays in tests and inspections, issue of inspection notes; delays in issue of "Receipt Certificate" and delays in issue of amendment to contracts.
- (ii) Delays in adjustment of items of transfers between P.W. Officers under remittance head largely due to non-observance of rules relating to such transactions concerning issue of stores from one division to another in as much as proper receipts and of proper persons are not taken and prices not settled in advance.
- (iii) Delays in receipt of adjustment memo from Accountant General for adjustment of supplies received through Director General, Supplies & Disposals due to a very lengthy procedure for adjustment of such transactions.
- (iv) Delays in receipt of advices from Accountant General against credit notes for railway freights, etc.
- (v) Delays in final adjustments of debits from workshop and machine shop suspense towards respective estimates of works.
- (vi) Purchase of stock materials in excess of the sanctioned reserved limit and in excess of requirements for want of an estimate and carefully prepared budget of store requirements.
- (vii) Purchase of non-standard articles and equipment.
- (viii) Ignorance of inter-changeability of spare parts of mechanical equipment.
- (ix) Purchase of spares by "Middle Man's" numbers instead of the original manufacturers' standard part nos. e.g. American Standard National Oil Seal No. 50130 is available with 38 different part Nos. and 38 different high prices. While parts are in stock with "Middle Man's" numbers but the equipment remains idle for want of standard part nos. which are then purchased, thus resulting in surplus purchases.

2.3.5. *Register of Works*

Improper maintenance of the register of works was due to :—

- (i) Starting work without a detailed estimate and consequent incomplete posting of expenditure in the register of works by sub-heads.
- (ii) Estimates not being prepared in sufficient details.
- (iii) Defective posting of work abstracts e.g. quantities of work don not abstracted.
- (iv) Lack of interest on the part of the P.W.D. Officers keepin entries for quantities and rates blank.

2.3.6. *Analysis of Rates*

Absence of detailed analysis of rates was due largely to the lack of experience for mechanised methods of construction involving complications and a huge number of items.

2.3.7. *Estimates*

Non-preparation of detailed or revised estimates on standard forms was due mainly to lack of interest on the part of engineer officers and the sanctioning authorities.

2.3.8. *Material at Site Account*

Improper maintenance of this account is mainly due to the fact that as a rule :—

- (i) Engineer Officers loath its maintenance both to avoid work and subsequent explanations for incorrect issues;
- (ii) inexperienced staff;
- (iii) complicated procedure and huge number of items;
- (iv) want of issue rates for stores.

2.3.9. *Incomplete Stores Accounts*

- (i) Inadequacy of stores classification and absence of detailed rules and procedure.
- (ii) Inadequate staff in stores and accounts.
- (iii) Inadequate staff strength.
- (iv) Unsuitability of some of the existing forms for purpose of stores accounting.
- (v) Difficulty in physical verification of stores due to lack of separate organisation for the purpose.
- (vi) Difficulty in fixing issue rates half-yearly, on the basis of market rates.
- (vii) Making out of fresh registers half-yearly.
- (viii) Inadequacy of proper arrangements and method for storing articles.

2.3.10. *Equipment Accounts*

A good deal of diversity exists on projects in the maintenance of equipment account due to the absence of any standardised rules and forms in the existing codes.

2.4. Remedies

2.4.1. We are fully conscious of the fact that the present Central Public Works Account and other Financial Rules are a result of the gradual evolution of the system over a century and that they have stood the test of time. We have, therefore, given them the consideration they deserve. The mechanisation of the methods of construction of civil engineering works has necessitated certain amendments to existing rules and forms and introduction of a few new forms to meet the requirements of large River Valley Projects.

The Committee considers that the following measures, if adopted, would go a long way to remove the above shortcomings.

2.4.2. *Muster Roll*

The chief cause leading to improper maintenance of muster rolls, as already described in para 2.3.2., is that one single man has to perform a

number of duties. Evidently this could be avoided if the duties are distributed among a number of persons. A system of time keeping is, therefore, recommended for being adopted on all large River Valley Projects. This system has been described in detail in Appendix V and its salient features are :—

- (i) Employment of labour has been entrusted to an Employment Officer.
- (ii) A time-keeping system has been provided for keeping the time of each man.
- (iii) Payment and account keeping has been entrusted to a cashier.
- (iv) Costing will be done in a separate section. The overseer will thus be kept in charge of execution and physical verification of the work and relieved of all other duties attached to maintenance of muster rolls.

2.4.3. *Verification and Pricing of Stores*

The present Public Works Account forms dealing with the maintenance of stores accounts should be replaced by fresh forms of Stores Ledger, Store Received Books, Stores Issue Books, etc. The work of verification should be entrusted to a separate officer known as "Stock Verifier" appointed for the purpose. The procedure has been described in detail in Chapter 4 of this report.

2.4.4. *Suspense Balances*

As recommended by the Store Purchase Committee the inspection of supplies should commence within a week at the latest from the receipt of the intimation from suppliers to start inspection. After the inspection is over, the issue of inspection notes should not be delayed beyond 24 hours. Similarly, amendments to contracts should also be issued to all concerned without delay.

Under the present system a supplier normally gets paid 90/80 per cent of the cost of stores, when despatched by rail, on production of inspection note and proof of despatch, and the balance only after the consignee has certified the receipt of stores in good condition. This certificate is often not furnished promptly because the consignee loses interest in the matter after he has received the stores. It is, therefore, recommended that the balance of the bill should be cleared immediately after the supplies have been passed. A condition should be incorporated in the terms and conditions of contracts to enable the supplier to claim payment on indemnity bond. It is also recommended that a provision similar to the existing advance payments as described above should also be made in contracts for local deliveries.

2.4.5. Huge balance due to unaccepted items relating to "Transfer between P. W. Officers" remains outstanding in the books of various divisions due to disputes about quantities and rates, etc. and want of proper receipts. The Central Public Works Accounts Code, para 443 requires an acceptance in form No. PWA 56, responsibility for which is that of the debiting division. Such acceptances are generally delayed. It is recommended that debits for supply of stores and other materials be incorporated in financial accounts on the basis of issues from godowns supported by the receipt of indenter or his clearing agent.

2.4.6. The payment for the supplies received through Director General, Supplies and Disposals are under rules, brought to account on receipt of

adjustment memos from Accountant General as the payment for such supplies are made by the department of Director General, Supplies and Disposals. This is a lengthy procedure requiring normally four to six months before the divisional accounts take its cognizance.

In order to avoid this delay and to have prompt clearance of suspense balance, it is considered necessary that payment for such supplies should be authorised to be made by cheque by the Officer receiving them *in so far as the rates and running contracts are concerned*. The present centralised system of payments against supply contracts affords, as pointed out by the Store Purchase Committee, unified control on accounts, makes checks on authenticity of documents easier, facilitates recoveries of amounts due, ensures effective liaison with the purchaser and avoids possibilities of delays in payments due to multiplicity of payment authorities. The suppliers also prefer to deal with one authority for payment of their bills. On the other hand, decentralised system would render easy the linking of the payment with physical receipt of stores, afford effective control over expenditure; and avoid possibility of lapsing of funds due to delays in adjustment of accounts between the Central Payment Authority and the Indenting Departments.

2.4.7. The present rules require that payment of railway freight, etc. should be made by credit notes, if it exceeds Rs.100. The final adjustment of such liabilities is carried out on receipt of memos from Accountant General. It has been recommended by the Committee that such payments be made by cheque and cash in order that these may come into account at once and thus reduce the balance under suspense on this score. The Railway Board was addressed on the subject, and they have stated in their letter at Appendix VI that there should be no objection to facility of payment by cheque of railway freight by such departments as may desire it being granted.

2.4.8. On completion of a job the outstanding amount under Workshop Suspense should be cleared either by cash recovery or adjustment and a periodical review of completed jobs be carried out and clearance affected. This procedure is already laid down in C.P.W.A. Code, Paras 371—373. All that is necessary is that prompt action be taken.

2.4.9. A budget for stores requirement should be carefully prepared year to year for the duration of the project and reserve limits laid down accordingly.

- (i) Disposal of surplus and unserviceable stores should be promptly carried out. Lists of surplus stores should be made out carefully every half year and circulated to Project Authorities, States and business firms in the line.
- (ii) Purchase of non-standard and obsolete equipment must be stopped. This could be achieved by maintaining full specification and make, etc. of the equipment in the relative estimate so that the sanctioning authority may be able to decide on the advisability of purchasing of the same.
- (iii) Proper discretion regarding purchase of spares should be exercised.
- (iv) A comprehensive list of spares that can be interchanged should be prepared for each type of equipment and kept ready for use at all times.
- (v) Verification of stores should be continuous.

2.4.10. *Register of Works*

The register of works is a permanent and collective record of expenditure in a Division and is designed to give a comparative picture of expenditure and its return in the shape of output of major items. Its complete posting depends on proper preparation of detailed estimates and of work abstracts. It is recommended that in the case of smaller projects the present forms of registers of works (Forms CPWA 40 & 41) and work abstracts may continue and in case of larger projects the simplified forms may be used in conjunction with costing cells.

2.4.11. We have proposed that a separate Costing Section should feature on large River Valley Projects. It will mean duplication of work without corresponding advantage if the detailed posting of the register of works is insisted upon as at present. A revised form (No. N-35) has, therefore, been proposed by us for the register of works. This register should be invariably posted before submission of accounts to Accountant General as required in para 286 of Central Public Works Account Code and laid before the Divisional Officer for review.

2.4.12. *Detailed Analysis of Rates*

Para 81 of the Central PWD Code requires an analysis of rates to be attached with each estimate. This rule is not being followed in most places. It is necessary to enforce it.

2.4.13. *Estimates*

Para 97 of Central Public Works Department Code requires a revised estimate to be accompanied with a comparative statement of quantities and rates on the prescribed form together with a report showing causes for variations. A rigid compliance with these rules is called for. An estimate should be prepared in such details and in such a manner as may enable distribution of cost on elements of work and comparison of actuals with estimated figures.

2.4.14. *Material at Site Account*

This involves considerable labour. It is generally in arrears and is made little use of in actual practice. It is recommended that this work be dispensed with and that all materials should be made to pass through stock accounts. Physical verification of stores issued to work should, however, be carried out periodically and quantity accounts of receipts and issues maintained for each work by the supervisor in charge in the Maukawar (site) registers required to be maintained by Sectional Officers.

2.4.15. *Incomplete Stores Accounts*

- (i) The subject of stores classification and rules of procedure and forms have been dealt with separately.
- (ii) Trained and adequate staff should be posted to Stores Section well in advance of the requirement.
- (iii) Measurement book should be replaced by Stores Received Books which should be treated with the same care. This should facilitate prompt recording and payment of supplies. The amendments to some of the existing forms and proposals for new ones are given in Chapter 6.
- (iv) There should be a separate organisation for store verification which should work on this function continuously.
- (v) The present system of fixing issue rates on the basis of market rates is cumbersome and difficult to follow in places where the number of items run into thousands. A priced store ledger

(Form No. N-18) has been recommended for use and is dealt with in detail in the Chapter on Stores. Standard issue rates be fixed for duration of project.

- (vi) Chapter-VII of CPWA Code requires maintenance of record of stores half-yearly which entails a huge amount of work in copying out the old registers of stock. It also does not show the maximum and minimum limits for stacking of stores, nor does it give details of daily transactions. A new set of forms, viz. bin card, and store ledger have been recommended to replace the half-yearly balance return and register of stock receipt/issue and half-yearly register of stock to avoid the above drawbacks.
- (vii) Proper stores yards with bins, etc. should be made for storing the materials with necessary staff on watch and ward.

2.4.16. *Equipment Account*

A ledger for all equipment along with spares and parts received should be maintained on form No. N-25 by each equipment. As regards accounting for the operation of machines so far as it relates to the engineering portion has been dealt with in Chapter 5 on Cost Control.

2.4.17. *Reconciliation of Costs Accounts with Financial Accounts*

A cost section is essential on a large project to know the financial results at any stage. Figures and items in Cost and Financial Accounts Section should be tallied monthly and differences, if any, reconciled. To facilitate this reconciliation it is recommended that field reports for labour, equipment, materials, etc. should be prepared in duplicate and transmitted direct to accounts and cost section.

2.4.18. *Classification of Accounts*

In any work of large magnitude, where a great number of accounts are involved, a proper system of designating physical quantities and details of accounts by units must be adopted to facilitate classification of expenditure.

2.4.19. The existing system of classification is good enough so far as the major and minor heads of accounts are concerned. The difficulty arises when we come to detailed heads and their sub-heads. Their classification by alphabets is inadequate to cope with the present-day requirements and it is the chief cause why accounts are unable to throw up figures for cost of items of work on most of the River Valley Projects.

2.4.20. *Example of Decimal System of Classification*

The following classification is recommended for adoption :—

- 10.00 Preliminary Expenses.
- 11.00 Dam and Spillway.
- 12.00 Power House and allied works.
- 15.00 Weirs and Barrages.
- 16.00 River Training and Diversion Works.
- 17.00 Main Canal and Branches.
- 18.00 Distributaries and Minors.
- 19.00 Flood Control and Drainage Works.
- 20.00 Navigation.
- 21.00 Re-location of Highways and Railways.
- 22.00 Communications.

- 23.00 Power Generation.
- 24.00 Power Transformation, Transmission.
- 25.00 Power Distribution and Supply.
- 26.00 Ground Water.
- 27.00 Soil Conservation and Land Reclamation.
- 28.00 Fish and Games, Reservoir Navigation, Recreation.
- 29.00 Gates, Allied Fixture and Equipment.
- 30.00 Township.
- 31.00 Construction Plant and Equipment.
- 32.00 Construction Plant and Equipment Operation.
- 33.00 Bunds and Tanks.
- 34.00 Water Courses.
- 35.00
- 36.00
- 37.00
- 99.00 Police, Posts and Telegraphs, Fire Protection, Watch and Ward, Health and Sanitation, Medical Facility and Water Supply and Sewage, Camp Operation and Maintenance.

2.4.21. *Dearth of Experienced Personnel*

There is no denying the fact that there is a great dearth of experienced and efficient hands both on the engineering as well as accounts side on most of the projects. It is partly due to poor calibre attached to these services and partly due to sudden expansion in their cadres. This difficulty can be solved to a great extent if conditions of service are made more attractive and a system of competitive examinations is introduced for recruitment. A qualifying examination in accounts should be prescribed for all officers. Departmental examinations in accounts be made compulsory for routine clerks before entitling them for promotion above a certain grade.

In heavy construction divisions, an S.A.S. accountant should be posted to perform the duties of an accountant. On large river valley projects the accounts branch should be split into a number of sections each headed by a senior accountant on the following lines :—

1. Wages and cash.
2. Materials and stores.
3. Equipment and tools and plant.
4. Accounts compilation and posting.
5. Establishment—Salaries, leave and pension and T.A. bills.
6. Verification of stores.

CHAPTER 3

CENTRAL WORKSHOPS

3.1.1. Although Central Workshops are a necessary adjunct to large River Valley Projects, there are not specific rules on the subject in CPWD Code. The following rules and procedure based on the practices obtained on the Hirakud and Chambal projects have, therefore, been outlined for the guidance of officers.

3.1.2. A Central Workshop should have the following Sections :—

- (i) Shops as many as necessary,
 - (ii) Employment Section under Labour Officer,
 - (iii) Time office under a Time-keeper,
- with necessary staff.

3.1.3. Recruitment of personnel should be made through an Officer incharge, Employment Section, in accordance with the procedure given in Appendix V on Time Keeping.

3.1.4. The main features of the Time Keeping System are :—

1. That there will be an Employment Section under an Employment or Labour Officer. All requisitions for labour and work-charged establishment will be placed on him in form T/K-1 in duplicate.
2. The Employment Officer will recruit the establishment, fix the wage rate and issue an Apptt. Card in form T/K-2 and enter the particulars of each employee in a card known as "Service Register" in form T/K-3, and direct him to the officer concerned.
3. The Requisition Officer will fill up part II of the Apptt. Card and direct him to the Time-keeper incharge of the Time Office.
4. The Time-keeper will retain the Apptt. Card and after assigning him a badge number issue him a brass ticket containing his No. and also an identity card in Form T/K-4 containing his photograph and other particulars. The record of identity cards and brass tickets issued will be maintained in forms Nos. T/K-5 and T/K-6 respectively. The employee will then be directed to the shop or the site of work.
5. The Foreman or the Overseer will maintain a time card in form N-21 for attendance of the labour.
6. No workman will be allowed to go out without a gate pass in form T/K-7 signed by an officer not below the rank of the Foreman or Overseer.
7. Time-keeper will exercise a daily check on attendance and maintain a daily check sheet in form N-22. The daily check sheet and the time cards will be reconciled.
8. Pay roll will be prepared in form N-23 for wage period by Time Office, checked and passed by the accountant.
9. Payments will be made by Cashier or other clerks appointed for the purpose after identification through the identity cards which will contain a photograph of the employee. "No Demand" certificate and "Pay Release Order" should be obtained when necessary in forms T/K-10 and T/K-11.

3.1.5. *Supervisory Staff*

The Workshop should be divided into a number of shops or departments to suit the local requirements. Each shop will be under a chargeman assisted by a clerk. Time-keeper will be incharge of the Time Office and a Foreman or Sub-divisional Officer may be placed incharge of two or more shops.

3.1.6. *Hours of Work and Overtime*

These will be fixed according to the provisions in the Factory Act. Normally shift of 8 hours a day or 48 hours a week, suitably divided into two four-hour shifts on each day with a weekly holiday on Sunday or some other day, is permissible. In case of necessity for working overtime necessary sanction should be obtained. A form W-5 has been proposed for the purpose.

3.1.7. *Late or Partial Attendance*

Some penalty for late or partial attendance is considered necessary. It is proposed that for late attendance exceeding five minutes but not exceeding 15 minutes wages for half hour should be disallowed and for late attendance exceeding the previous ceiling limit but not exceeding half hour, one hour's wages should be forfeited. Such late attendance should be noted in the records of the Time Office and the Shop concerned. In case of a worker leaving the work before the expiry of the day's shift he should be allowed only proportional wages for the period he actually worked.

3.1.8. *Leave and Holidays*

These should be the same as provided by the Factory Rules applicable to the area.

3.2. **Procedure**

3.2.1. Expenditure in a workshop can be classified under (i) Direct charges, and (ii) Indirect charges.

3.2.2. Direct charges include labour and material relating to specific jobs and can be allocated directly to the job concerned under the Suspense Head "Workshop Suspense."

3.2.3. All other charges of a general nature, which cannot be assigned at once to a specific job are classified as "Indirect Charges" booked directly under the head of account concerned, recovery being effected by debit to the jobs executed at a fixed percentage to cover such over-head charges which are generally made up of—

- (i) Supervision.
- (ii) Maintenance of Machinery, Plant and Buildings.
- (iii) Depreciation of Machinery, Plant and Buildings.
- (iv) Establishment Charges.

3.2.4. Annual proforma account of each Workshop should be prepared in such form and details as may be prescribed by Government in consultation with the Accountant General and will consist of :—

- (i) Capital Account,
- (ii) Outturn Account,
- (iii) Profit & Loss Account,

to show the net financial aspect of the undertaking at the end of that year.

3.2.5. For every job undertaken in the shop there should be—

- (i) Requisition in Form W-1.
- (ii) Detailed estimate of cost duly sanctioned by a competent authority and accepted by the indenting party.
- (iii) Deposit of estimated amount taken in advance from private individuals, if any.

3.2.6. On entry into the Workshop each workman will take from the Time Office Board his ticket and then proceed to his place of assignment *i.e.* Shop. Access to the Token Board should be provided for only 5 minutes before the commencement of the shift and the late comers will be given the ticket at the window of the Time Office. He will put his ticket on the board. At the close of the shift, he will take the token and deposit it with the Time Office.

3.2.7. The Time-keeper will, after assessing the total number of workers present send a report of the same in each category to the Sub-divisional Officer and the Executive Engineer.

3.2.8. Each Shop should have a board ruled as shown below on which the chargeman should enter in chalk every morning and afternoon the Token number of each man working in that shop and work order number on which he is employed together with the number of hours worked on each job. This should be done carefully as it would serve as an index for pricing of each job.

Morning				Afternoon			
T. No.	W. O. No.	No. of Hours		T. No.	W. O. No.	No. of Hours	
		From	To Total			From	To Total

3.2.9. The Chargeman with the assistance of the shop clerk will note the number of the tokens put on board by the workman, on the Foreman's Time Card form N-21.

3.2.10. When any of workshop staff (other than Senior Supervisors) or any materials are to be sent out of the workshop they/it must be accompanied by a proper authority of a gate pass in form T/K-7. They should be signed by officers not below the rank of a foreman and checked at the gate both by Time Office and Watch and Ward Staff and signed as a proof of check. The counterfoil of gate pass should be frequently verified by Accountant by a tally made with the original copies recorded in the Time Office.

3.2.11. Gate passes should also be used in cases of staff going out on duty, or for medical treatment.

3.2.12. In the case of accidents no gate passes should be necessary and the person concerned should be marked present for the whole morning or afternoon term in which the accident occurred.

3.2.13. Payment of wages to other than the establishment employed on monthly basis should be made weekly or so giving due notice of so doing two days before.

3.2.14. The allocation of charges to the various jobs on which the worker was employed on each day will be shown in form W-7 by Time Office and sent to Divisional Officer where will be prepared work analysis in form W-9 showing allocation of labour against each work order each day.

3.2.15. The Foreman will be responsible for the work in the shops in his charge. He should maintain a record of the time for which each worker is employed each day in a register in form W-8. In case of necessity of over-time work he will apply and obtain necessary sanction on form W-5.

3.2.16. Each shop having machines should be provided with a lock-up cupboard for each machine having a set of tools, spanners, etc. and a list of tools should be fixed on the inner side of the door. Each workman taking charge of a machine should check that the equipment is complete according to the list bringing to the notice of the Foreman any differences that he may find.

3.2.17. Special tools, jigs, etc. should be obtained from Stores under the signature of the Foreman who will be responsible for them till they are returned to Stores, unless he can fix responsibility on some one in case of loss etc. When they are returned he should take back the receipt given for them.

3.2.18. The Foreman will obtain foundry materials from Stores on Indent form N-13 in quantities roughly sufficient for a month. The expenses will remain charged to a separate work order of Foundry Suspense till its eventual transfer to Store Suspense, or other work orders concerned.

3.2.19. There should be created a sub-store, where necessary, in the Workshop in the charge of a Store-Keeper who should be secured. The Stores will be obtained by indents on the main store chargeable to Workshop Suspense Stores Suspense Work Order which will also be cleared monthly through a Transfer Entry Order by debit to jobs concerned *per contra* credit to Store Suspense work order.

3.2.20. Store from the workshop Store will be issued on an indent in form N-13. The Store-Keeper will obtain a receipt for the stores supplied and send each day the receipted indents to the Divisional Officer the same day by the evening with a covering list in form W-6. The Store-Keeper will at the same time complete the bin card form N-10 and the form W-6 in duplicate by carbon process immediately as transactions occur, separate forms being used for receipts and issues. The reports should be completed and sent to the Divisional Officer before closing for the day. The Divisional Officer will maintain a ledger in form N-18 and prepare materials analysis in form W-10 showing consumption of material on each job.

3.2.21. In order to fix the cost of a job the following charges should also be taken into account over and above the cost of stores used and labour charged direct to the job.

- (i) General charges at a fixed percentage sanctioned by a competent authority to cover the pay of Foreman, Chargeman, Time Keepers, Chowkidars and Store-Keepers, and other charges for repairs, electric current, water supply, stores of general nature like lubricants, wastes which cannot be allocated to specific jobs.

(ii) Indirect charges at a fixed and sanctioned percentage over the total cost to cover the charges for—

- (a) Supervision on value of stores consumed.
- (b) Interest on capital.
- (c) Maintenance of buildings.
- (d) Depreciation of buildings, plants and machinery.
- (e) Establishment.
- (f) Audit and account.

The above charges will be credited to Receipts and Recoveries on capital account.

3.2.22. On an estimate being sanctioned and accepted, an entry will be made in the job register form W-4, a work order drawn in form W-2 and also a job card in form W-3 in duplicate, one copy being sent to the Foreman and one kept in the Divisional Office. No work will be undertaken in the workshop without an order in form W-2. The work order should be serially numbered.

3.2.23. A job card in form W-3 will be maintained for each work order. Entries in a job card in respect of labour will be filled in by the Foreman concerned. The column for stores will be filled in from the Store-Keeper's report in form W-6. All other miscellaneous items of expenditure pertaining to jobs will be entered in the column "Miscellaneous".

3.2.24. The Divisional Accountant should check and agree the totals of pay roll with that of allocation sheet in form W-7.

3.2.25. On completion of a job necessary entry will be made in the register of work orders and the job card completed by adding overhead charges referred to the total cost of each job will be entered in a cost ledger in form W-11.

3.2.26. At the end of each month's account, the charges referred to in item 3.2.21. above should be levied on jobs completed during the month. A transfer entry order should then be prepared for debiting the account of each job concerned and crediting "General Charges Suspense" and Receipts and Recoveries on Capital Account with their respective shares. Another Transfer Entry Order should also be prepared in respect of these jobs debiting the party's account or Head of Account concerned *per contra* credit to Workshop Suspense for each shop and the account of each job.

3.2.27. A monthly schedule of workshop suspense should be prepared in a manuscript form. The grand total of the schedule will show the monthly debit, credit opening and closing balance under the head "Workshop Suspense" debits and credits should agree with the figures in compiled accounts.

3.2.28. A consolidated account by jobs of workshop suspense will be maintained by each job or work order in the Suspense Register (CPWD Form 67).

3.2.29. If the percentage rate for general charges is correctly fixed, there should be no balance under the "General Charges Suspense" at the end of the year. Any credit balance under this head should be credited to Receipt and Recoveries on Capital Account and debit balance written off under the orders of a competent authority in order to have no balance under this head at the commencement of fresh year.

3.2.30. A bill in sample form No. W-12 will be prepared in triplicate and two copies sent to the Indenting Officer for acceptance.

3.2.31. The closing balance under “Stores Suspense” and “Foundry Suspense” should represent the value of stores in hand and the materials in operation at the end of the year.

3.2.32. At the end of a year a proforma account to show the financial aspect of the undertaking be prepared with the following accounts and sent to A.G. by say July.

- (i) Revenue and expenditure account.
- (ii) Profit and loss account.
- (iii) Block account.
- (iv) Indirect charges, interest, depreciation and audit.
- (v) Statement of outturn showing number of jobs and value of outturn.
- (vi) Balance sheet.

Opportunity should then be taken to review and revise the rates for general charges and indirect charges.

3.3. Forms

3.3.1. Appendix III gives the forms referred to in this chapter.



CHAPTER 4

STORES

4.1. General

4.1.1. A perfect stores system should be able to lead to :—

- (i) Efficiency and economy in management.
- (ii) Prevention of waste and pilfering.
- (iii) The exact allocation of all stores bought.
- (iv) Stock records indicating qualities of goods delivered by outside suppliers not upto the standard.
- (v) Secure protection against running short of materials and stores, the stores ledger showing at a glance the exact stock held from day to day.
- (vi) Afford protection against stocking and thus running the risk of loss by falls in the market value, by deterioration of the goods, and by danger of obsolescence.
- (vii) Afford check against locking up capital by carrying unnecessarily large stocks.
- (viii) Show up cases of duplicate ordering, and afford protection against it.
- (ix) Susceptibility of continuous test checks with a minimum stock-taking which is an expensive and troublesome process.

4.1.2. Stores Account System should in short be able to :—

- (i) Produce figures wanted by the Costing Section promptly.
- (ii) Present complete account of receipt and expenditure accounts.
- (iii) Show bad and good buying.
- (iv) Indicate quantity and value of stores without stock-taking.
- (v) Indicate ordering level without inspection.
- (vi) Indicate surplus, dead, unserviceable stores.

4.1.3. The condition of stock accounts on most projects is far from satisfactory as they have failed to fulfil most of the essential needs required. Briefly put, the defects noted can be grouped as follows :—

- (i) Purchase registers for orders placed for stores are not maintained to watch supplies and to avoid duplication of order.
- (ii) Register for railway receipts is not maintained to watch incoming supplies.
- (iii) Articles are not priced promptly in the absence of specified procedure for valuation prior to receipts of priced invoices and vouchers for Miscellaneous charges.
- (iv) Payment of bills is unduly delayed on account of non-availability of measurement books containing the bills, due to lengthy procedure of certification and payment with measurement books in hand.
- (v) Issues in the stores registers are roughly entered due to absence of code numbers, resulting in confusion and extreme difficulty in reconciliation of differences.
- (vi) Half-yearly register of stock is not closed resulting in non-fixation of rates for the ensuing half year.

- (vii) Physical verification is not generally carried out.
- (viii) Large accumulation of surplus and dead stores exists at each project, resulting in unnecessary locking of capital.

4.1.4. The present state of affairs is due to :—

- (i) Absence of classification and codification in stores.
- (ii) The inadequacy of the existing rules on management and accounting.
- (iii) Lack of trained personnel for stores management and accounting.
- (iv) Cumbersome methods of pricing and verification of stores, closing of stock accounts half-yearly and huge increase in the items of stores and their transactions due to the rapid advance towards mechanised methods of construction now being adopted on works.
- (v) Unsuitability of some of the existing forms of stores accounting.
- (vi) Inadequacy of proper arrangements and methods for storing articles.
- (vii) Unsuitability and inadequacy of stores.

4.1.5. Our recommendations on the subject are contained in the succeeding paragraphs.

4.2. Classification and Codification of Stores

4.2.1. According to current practice stores are classified as under and have no code numbers.

Small stores.	House fittings.
Building materials.	Miscellaneous stores.
Timber.	Manufacture.
Metals.	Land and kilns.
Fuel.	Storage.
Painter's stores.	

It is evident that the above classification has been evolved to cover mainly building materials and cannot serve the requirement of the River Valley Projects.

4.2.2. There is at present no codification of stores on most of the River Valley Projects. For this purpose decimal system is more suited than any other. In this system every item is given a code number which makes for convenience and accuracy of posting transactions. It also provides elasticity of expansion according to needs without disturbing the codification of items already in use and can be adopted to use of machines in store accounting.

4.2.3. The main classification and coding of stores is recommended on the following lines :—

<i>Code No.</i>	<i>Classification</i>
11,000	Building materials.
12,000	Plant and Equipment.
13,000	Auto Stores.
14,000	Chemicals.
15,000	Gums, Resins and Varnishes.
16,000	Petroleum, Fuel Oils and Lubricants.

17,000	Rubber goods.
18,000	Tar and Tar products.
19,000	Cement.
20,000	Steel and Steel products.
21,000	Non-ferrous metals.
22,000	Electrical Stores.
23,000	Sanitary Stores.
24,000	Mechanical Stores.
25,000	Scientific Stores.
26,000	Hardware tools.
27,000	Photographic and Cine Stores.
28,000	Railway Materials.
29,000	Explosives.
30,000	Clothing.
31,000	Glass and Glass products.
32,000	Timber.
33,000	Fire Arms and Ammunition.
99,000	Miscellaneous.

4.2.4. Each of the above group can be divided into 99 sub-groups and each sub-group can be sub-divided into 999 items allowing thereby ample scope of far expansion.

4.3. Limits of Stock

4.3.1. According to the existing procedure aggregate upper limit is sanctioned for each division for holding store and net outlay on stores should not exceed the limit. This limit may be revised as and when necessary. For each individual year net appropriation is sanctioned under head suspense. This may be plus or minus according to the estimated value of receipts of stores exceeding the value of issues and *vice versa*. But it is always implied that net outlay on stores will not exceed the limit mentioned above. The system may be all right for overall financial control on stores but for efficient working of stores on large River Valley Projects every item needs attention and proper planning so that stores may be in a position to supply all the items as required by construction engineers and at the same time there may not be un-required accumulation of any item. Such accumulation does not only mean lock up capital but also continuous cost of storage and safe custody and risk of deterioration and loss.

4.3.2. It is, therefore, necessary that maximum, minimum and normal order limits of stock are determined for each article. Such limits will be a great help in efficient and economical working of stores. When stock of an article is reduced to the minimum limit it should alert the store-keeper to take steps for its procurement and when the stock is at the upper limit purchases are stopped which will save locking up capital. Maximum and minimum limits should be fixed very judiciously with the objective that locked up capital remains the minimum compatible with regular and timely availability of required stores so that progress of work remains unhampered. It is also considered desirable to fix a limit for normal order to be placed for supplies.

4.3.3. Minimum limit of quantity of stock of an item should be fixed at such a level that it may generally be sufficient for the requirement of works during the period that is required for its procurement after the date of purchase requisition. Maximum limit may be fixed by consideration of periodical requirements which will depend on the convenient intervals of replacements and requirements of works.

4.3.4. Generally maximum limit should not exceed the requirements of a year plus the minimum limit unless some such conditions are foreseen that availability of a certain article may deteriorate in future or its price may go up. The limits for each individual item will depend upon the following factors :—

- (a) The time required to process an order.
- (b) The time required to procure the materials after an order is placed within or outside the country.
- (c) The rate of consumption of the article.
- (d) Availability of storage space.
- (e) Economical commercial units of purchase.
- (f) The capacity of the store organization to handle procurement orders, measurements of goods, binning and storing the articles and payment of bills thereof.
- (g) The provisions necessary to meet the contingencies of accidental needs of certain kinds of items.
- (h) The minimum amount of money that can be reasonably invested in stock.

4.3.5. If the procedure for procurement orders could be made short and quick, the minimum limits can be reduced thus effecting a saving on the overall investment. From this point of view it is better to have as many items under rate contract as possible so that no time may be lost in inviting tenders, etc. This is a pointer to the importance of minimum of centralisation and maximum of the delegation of authority to save time in routines of passing on the papers from one office to another.

4.3.6. The time required to procure materials from the market is dependent upon the availability of the materials in the market and the speed of transportation. When articles are available in the local market the minimum stock limit should normally need not exceed the requirement of 6 to 8 weeks. For materials that have to be imported from abroad, the time required is usually large resulting in the necessity for higher minimum limit. The officer fixing the limits must therefore be conversant with the availability of the article.

4.3.7. The rate of consumption of an article will depend upon the time schedule of construction. It is necessary therefore that the officer fixing the limit should also have a detailed list of the phased requirements of materials

for his works. The availability of storage space scarcely needs any comments except that this may have to be limited to keep down the investment on buildings and reduce the hazard of fire, theft, etc.

4.3.8. Bulk purchases are always cheaper than piece-meal purchase; but care should be taken to see that too much store is not ordered, in an endeavour to purchase at bulk rates, which may not be required in the near future or may deteriorate with time or otherwise become unusable.

4.3.9. Theoretically if an order could be placed every day for the requirements of a material in regular demand, the minimum stock limit can be kept very low say only for one day's needs if it is available on the same day. However, this will throw so much burden on the store organization, that it will not be able to cope up with the work of ordering, receiving, paying and binning the goods. It is necessary, therefore, to bulk the requirements and indent them at one time. Such bulking of orders should, however, be limited to not more than about 3 months' requirements but deferred deliveries may be asked for when necessary.

4.3.10. Certain types of stores are required to be held against an unforeseen demand, which if not satisfied, might result in dislocation of entire work. The forward indents for contingent stock holding of spare part is a typical example of this nature.

4.3.11. In case of mechanical equipment, it is recommended that the same should be standardised and supply of spare parts by the dealer concerned during the life-time of the machine should be made a condition of the purchase. Further, prices of the parts should be controlled by the Government taking into account net price in manufacturing countries, transport and other incidental charges so that the dealers may not indulge in profiteering. It will greatly reduce the requirement of Government investment in spares which accounts for a great portion of stores on mechanised River Valley Projects.

4.3.12. Reserve limit of stores should be fixed on the basis of detailed analysis as discussed above.

4.4. Procurement of Stores

4.4.1. Bulk purchasing of stores in a manner suited to each individual case, can undoubtedly prove an economical proposition.

4.4.2. The various purchasing organisations in vogue on projects in India are the following :—

- (i) The project authorities themselves.
- (ii) The State Stores Purchase Departments.
- (iii) The Central Stores Purchase Department.
- (iv) The India Supply Mission in various countries.

4.4.3. Stores purchase is a highly technical job involving specialised knowledge of various branches of engineering and it is obvious that no other agency except (i) above can possibly have all experts on its staff without making the organization unnecessarily expensive and even wasteful. This is also true that disposal of business in all expeditious manner can be assured by agency No. (ii) alone, for, the other agencies cannot be more conversant with the exigencies of the situation than the project authorities themselves.

4.4.4. We, therefore, recommend that a Store Purchase Committee be constituted on each large project and vested with full powers to make purchases direct. In order that these purchases be made in accordance with the

principles accepted by the Ministry of Works, Housing and Supply of the Government of India or by the Stores Purchase Officer, a senior Officer of these organizations may be associated with the Committee, as recommended by the Sub-Committee of the Central Board of Irrigation and Power in their report on Contract and Force Account System of Construction issued in 1952.

4.4.5. These Committees should ordinarily comprise :—

The project manager as the Chairman.

The S. P. Officer, D.G.S. The Chief Mechanical Engineer. The Financial Adviser. The Chief Accounts Officer.	}	Members.
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The Central Stores Officer as Member-Secretary.

4.4.6. Budget for the annual stores requirements should be prepared with the same meticulous care as the financial budget, supported by Stores Purchase Programme presented before the Purchasing Committee and passed before any orders are placed except in emergencies, for which special powers be vested in the project manager.

4.4.7. The Chief Stores Officer should be placed directly under the project manager, so that the latter may remain in touch with the true position of stores at all times.

4.4.8. Requirement of stores, by consideration of time factor, can fall under three categories :—

- (a) Routine.
- (b) Urgent.
- (c) Immediate.

4.4.9. Under the last category 'Immediate' can fall only the emergency requisitions mentioned in para 4.4.6. All indents will be routine requirements for purposes of procurements. In case of supplementary indents most of the items may be available in stores and some others may be arranged by routine procedure which some still may require urgent attention. However, in the interest of field engineers themselves, magnitude of urgent and immediate requirements should be kept as low as possible. If the magnitude increases such requirements cannot possibly obtain proper attention.

(a) *Routine*

There should be pre-planning for procurement of routine requirements. If recourse has to be taken to direct purchase, procurement procedure should follow the normal channel laid down for competitive rates obtained from a large field of market.

(b) *Urgent*

Urgent demands are those against which supplies are required within a month. Procurements will have to be made from the *ex-stock* offers. The same may be available from some of the firms in Rate Contract with any Central or State agency or else enquiry will have to be made from a group of selected suppliers whose names are maintained on the approved list. Short notice quotations or telegraphic enquiries will have to be made to save time.

(c) *Immediate*

The enquiries for such demands may be made by telephones or telegrams from a few selected suppliers. It is often in the interest of works to place order without ascertaining the price but this procedure is risky and should be resorted to only with firms of known repute by officers of adequate status.

4.4.10. In view of the fact that sometimes short cut procedures may have to be resorted to for urgent and immediate demands, it will be necessary to clearly define the powers of various officers in this respect depending upon the type of job, its magnitude and urgency.

4.4.11. There should be a close liaison between the Store and Field Engineer. As soon as a schedule of material required is worked out, the field engineers should examine the demand with reference to the materials already available in the Stores with a view to effecting necessary amendments. A requisition in form No. N-1 should then be carefully drawn up and sent in duplicate to the Procurement Section.

4.4.12. Purchase requisitions received in form N-1 from the various Indenting Officers should be consolidated into one or more for issue of enquiries by the Procurement Section. As already pointed out purchases through the State and Central Government purchasing agencies have to follow the procedure laid down by them and procurement department should follow the same. For the rest an enquiry should be issued as may be necessary according to the nature of requirement if it is routine, urgent or immediate. Purchase enquiries should be sent out in the form No. N-2. For bulk purchases of routine category exceeding a certain value (to be decided by the State concerned), it is desirable to give an advertisement in newspapers. For purchases of smaller magnitude, the enquiries may be restricted to the list of selected suppliers.

4.4.13. Where detailed specifications or drawings cannot conveniently be furnished with the enquiry it is often more convenient to ask for samples along with the quotations. The selection of the firm on whom the order is to be placed will, in that case depend upon the quality of the goods and its relative price which may not necessarily be the lowest.

4.4.14. *Inquiries of Tenders*

The following are amongst the different methods of obtaining quotations :—

1. Open tenders by advertisement.
2. Limited tender *i.e.* by invitation to a limited number of firms.
3. Single tender *i.e.* by invitation to one firm only.

4.4.15. The primary duty of the procurement officer is to obtain the best value for the money spent consistent with timely procurement. The adoption of one or the other form of enquiry should be given very careful consideration as this is one of the effective methods of keeping down the rates.

4.4.16. *Open Tender System*

This system of invitation of tender by public advertisement should be used as a general rule for big purchases, the monetary limit for which should be fixed by the State concerned.

4.4.17. *Limited Tenders*

Enquiries under this procedure of purchase are issued to a limited number of firms on the approved list of suppliers for the class of required goods. This system is operated upon where the value of the goods required is below a certain limit, to be fixed by the State concerned or when the demand is urgent or immediate.

4.4.18. *Single Tender*

This system may be adopted when the article required is of a proprietary nature such as spare parts of machinery. It should be ascertained if there is any rate contract for the same, so that the same may be utilised as far as possible.

4.4.19. *Receipt and Opening of Tenders*

Quotations should be invited in sealed covers with instructions to the suppliers to indicate on the cover, the nature of enquiry and the due date of opening the quotations. Tenders should not be received by hand. All these tenders should be collected by the Procurement Officer and kept under safe custody till the date and time fixed for opening the tenders.

4.4.20. It is desirable to open tenders and quotations, as far as possible before the tenderers or their representative if any, by an officer authorized to do so, who should initial every page of the quotation or tender and conditions in them, if any and number them serially.

4.4.21. Quotations received after the due date should not normally be admitted. The cases where there is evidence to show that the quotation was actually sent by the party prior to the date of opening but was not received in time owing to the delay in transit may be taken into consideration at the discretion of the officer calling for the quotations, but the tenders or quotations submitted after the scheduled date and hour of opening them should be summarily rejected.

4.4.22. Comparative statement of quotations should then be made and scrutinised by some responsible official and initialled by him. Orders of competent authority duly empowered to place the order should then be obtained. In dealing with the competitive quotations the same care should be exercised as it normally requires to be customed to deal with competitive tenders of Public Works Department.

4.4.23. *Purchase Order*

A suitable form of Purchase Order is given at No. N-3. The number of copies of the purchase order required will depend upon the complexity of the organization. In most of the cases six copies, distributed as under will be found suitable. These should be filed serially and suitable remarks made as materials are received.

1. To the firm.
2. To the officer receiving store.
3. To the officer holding the store.
4. To the ultimate user.
5. To the Accounts Branch.
6. Office copy of the procurement officer.

4.4.24. Any change in the rate or terms, etc. made subsequently to the placing of the orders must be intimated to all concerned, to whom copy of the purchase order was sent.

4.4.25. Repeat Orders

When materials are required during a contract period in excess of the quantities contracted for, and such excess is not sufficiently large to justify the invitation of fresh tenders, there may be no objection to quantities outstanding under the existing contract, if any, being increased suitably by a repeat order, provided that as a result of negotiation the favourable terms are received for the purchase than would have been possible by making fresh tenders.

4.4.26. Register of Purchase Orders

A register in form No. N-4 should be maintained by the Procurement Officer and the Officer receiving the stores which should be kept up to date from the copies of purchase orders, etc., and periodically examined to watch prompt supplies, etc.

4.5. Inspection, Receipt and Payment of Stores

4.5.1. The Railway Receipts received from the suppliers for goods despatched by rail are required to be very carefully handled as they form an important link in the procedure for stores accounting. A record of railway receipts should be maintained in form No. N-5 by the official entrusted with the clearance from the railway.

4.5.2. Returned Stores

Sometimes goods may be returned to stores from works; form No. N-17 should be used for the purpose and drawn up in triplicate. One copy should be retained by the person returning it and 2 copies should be given to the Stores Section to which goods are delivered. The person receiving the store should sign both the copies in acknowledgement of the store and return one copy to the person who sent the stores and keep the other to accompany the 'Stores Received Book'.

4.5.3. Inspection and Measurements

All consignments of materials received against purchase order should be opened in the presence of an officer responsible for inspection and count. The inspection should be carried out in reference to the standard specifications or drawings etc., indicated in the purchase order. In cases where orders are based on approved samples, the standard sample should be held under a seal by the Inspecting Officer and stores accepted only if they reach the standard of the approved sample.

4.5.4. All materials on receipt should be examined and counted, weighed or measured as necessary. Under the existing financial rules measurements have to be recorded in measurement books (Form CPWA 23) whether these relate to works or materials. The form of measurement books is not suitable for recording measurements of supplies of materials. Also it gives only a single record of the articles received. The procedure of having to pass books and bills to various tables for payment causes delay in payments and arrears of completion of the connected records. It is, therefore, proposed to replace this form with a form of "Stores Received Book" (Form No. N-8) for recording receipts of stores ruled out properly. This form affords convenience for accelerating movements and timely completion of records. This form should, in the first instance, be prepared in triplicate by carbon process using indelible ink or copying pencil; one copy for retention with the officer receiving store, second is intended for the

disbursing officer for making payments and posting ledger and the third for preparation of abstract in form No. 11. The signature and designation of the officer taking measurement should invariably be written. The form should be machine numbered. Complete instructions regarding its preparation are given in Chapter IV of this report.

4.5.5. *Rejected Stores*

Unaccepted stores should be kept aside and the parties concerned immediately informed of the rejection through a Rejection Memo in form No. N-6 with the request for immediate removal of the stores from the Government owned premises. In order to have a consolidated record of such rejections for future reference, it is recommended that a register in form No. N-7 known as Rejection Register, be maintained. This will also serve as a record of the unreliability of the firms in respect of supply of specific items.

4.5.6. *Materials Received Short*

The shortage found on opening the consignments should at once be intimated to the supplier concerned. In case of damaged packages booked on railway risk a remark should be given in the Railway Delivery Book, short certificate obtained and claim lodged with the railway immediately. Record of claims for such shortages should be kept in a manuscript register to watch the clearance. Payment to suppliers for shortages accepted by the railways as their responsibility can be made debitable to Misc. P.W. Advances, pending clearance on recovery from the railway.

4.5.7. *Payment of Railway Freight*

Various methods of payment of railway freights, by cheque, cash and credit notes are at present in vogue in the River Valley Projects. The delay generally attending the adjustment of credit notes, rules out the adoption of this method. Payment by cash would involve handling of large sums of money demanding adequate security arrangements and would not seem suitable. At some projects payment by deferred freight system has been allowed by Railways, under which the Station Superintendent sends a consolidated bill once a week for the consignments cleared during the week and then payments made by cheque. This system does not seem to have any advantage as the bills would require verification etc., and may result in delay and accumulation. The Committee considers that such payments should be made by cheques and cash to cover the difference between the cheque and actual claims if demurrage, wharfage, etc., which cannot be known in advance, have to be paid. The system was referred to the Railway Board, who have stated in their letter No. 4486-TC, dated the 19th May, 1955 that they have no objection to the facility of payment of freight by cheque being granted to such of the Civil Department of the Central as well as State Government as may ask for it; copy of correspondence is given in Appendix VI.

4.5.8. *Payment of Bills*

4.5.8.1. To avoid delays in payment of bills it is recommended that the suppliers should be asked to send the bills in duplicate giving reference to purchase order and R.R., etc. These should be entered in the bill register form No. N-12 which is maintained to watch their settlement. During the course of our visits it was seen that on many of the projects such register in one form or the other was being maintained.

4.5.8.2. As the measurement of stores included in the bill should have already been recorded immediately on receipt, the relative Stores Received Book should be completed in respect of rates and amount. It will sometimes happen that incidental charges like packing, forwarding, insurance, etc. cannot be included in the Store Received Book until receipt of bill. In such cases a supplementary Store Receipt Book should be prepared including these charges so that the total of the two Store Received Books will tie up the accounts between the value of the stores received and the expenditure through cash book on the stock sub-head concerned.

4.5.8.3. The receiving officer will connect the bill with the relative Store Received Book giving its reference thereon. He will check it with entries made therein and the purchase order and record the certificate of verification required as per instructions for completing Stores Received Books given in Appendix IV.

4.6. Accounting of Receipts and Issues

4.6.1. *Direct Purchase versus Purchases through Stock*

C.P.W.A. Code, Para 99(a) requires that cost of stores should be debited to a final head of account concerned or to a particular work for which they are required if either of these can be determined at once otherwise it should be kept in suspense account pending clearance as materials are issued by debit to the specific heads of accounts or work. This system was satisfactory with small stores and arrangements could be made to keep materials charged to work and those charged to stock separately from each other. This does not suit the River Valley Project organizations where all stores are held by a Central Stores Organization for ultimate users. It is not possible for this organization to keep the materials charged to works separately from those charged to stock. The Committee invited views of the various project authorities and is of the opinion that in case where control stores are maintained all materials should be passed through one channel viz., Stock Account. This has the advantages of better control of receipts and issues and knowing the total consumption of an article at a glance from the ledger. This procedure may mean slight increase in clerical work in stock accounts but the fact remains that it would afford a better control particularly when detailed and clear M.A.S. Accounts could not be maintained for certain types of works e.g., operation and repairs of machinery, in accordance with the Code Rules.

4.6.2. At present the suspense head "Purchase" is subdivided into two parts viz., (1) purchases for stock, and (2) purchases for works. The Committee has recommended in para 4.6.1. that all purchases of stores should pass through stock account. The procedure for such purchases in para 344 of the C.P.W.A. Code is that "when materials are received from a supplier or from other department their value should be credited to purchases on closing the accounts of the month if they have been received for stock and payment has not been made for them during the month so as to secure agreement between the quantity and value account." In this system Purchase Account cannot be prepared until the close of the month specially where stock account is prepared in an office different from the one that makes payment. To avoid this difficulty it is recommended that all purchases even for stock should pass through "Purchase Account" in the first instance and clearance effected as and when bills are paid. This may involve some additional work in the maintenance of "Purchase Register"

but this would afford the much needed advantage of having control over the transactions and by this method the Purchase Account and its clearance can be maintained and watched from day to day.

4.6.3. *Purchase Register (Suspense)*

On almost all the River Valley Projects large balances were found outstanding clearance under suspense head "Purchases" mostly due to the difficulty of identifying items with the bills. To overcome this difficulty it is suggested that references to Store Received Book Number, and date, R.R. Number, and date, Purchase Order Number, and date and names of some prominent items be given in the column of 'Particulars of item' of P.W.A. form No. 67 (Register of Suspense) which would facilitate linking of items and their ultimate final clearance.

4.6.4. *Abstract of Receipts*

4.6.4.1. At present the abstract of store receipts is prepared for the entire sub-division and abstracted monthly in a single Abstract of Stock Receipt which is required to be posted in the Sub-Divisional Office from the Register of Stock receipts/issues (form No. 8), entries being made in respect of quantity. Every transaction of the month need not be entered severally in the abstract but it is sufficient to show as a single transaction the total receipt from each source. These transactions are so written as to group the articles by the prescribed sub-heads of stock. After all the transactions of the month have been posted the total receipt of each article is computed and entered in the column headed 'Quantities'. No entries are to be made in the Sub-Divisional Office, in any of the money columns as these are to be filled up in the Divisional Office. The values of the stores received are abstracted in the Divisional Office separately by each of the sub-head of stores and are further classified under 'Cash Payment or Purchases'.

4.6.4.2. The existing form No. 9 was suitable for small stores holding a few items only, but they are inadequate for recording large numbers of transactions common at River Valley Projects. Moreover, the size of the columns to each transaction is also found inadequate to enter the quantity and the value figures. In addition this form is required to be prepared within a few days intervening the date of closing of the monthly account and the date of its submission. The transactions are so large that it is very difficult to prepare it in duplicate which has to be done by manual writing as the layout is not convenient for typing.

4.6.4.3. The Committee is of the opinion that when once the receipt of stock has been recorded in the Stores Received Book form which is already classified by the sub-heads of stock, the duplication of working in preparation of this form is unnecessary. It is adequate to prepare an abstract of the Store Received Books sub-divided by stock sub-heads to serve the purpose of the existing form No. 9. In view of the fact that we have recommended passing of such transactions through purchases, no further sorting by 'Purchases or Cash Payment' is necessary. The form No. N-11 of Abstract of Receipt recommended by us is given in Appendix IV. This form can be filled up daily from one copy of Store Receipt Book which would form the accompaniment of the abstract.

4.6.4.4. We invited opinion of the various River Valley Projects authorities and Accounts Officers on the suitability of this system. The recommendations of the Officers are divided on this subject but the Accountant

Generals, Madras, Andhra and the Tungabhadra Board & Electricity Department of Madras are already using this system and have stated that they have found it very convenient and simple in operation. We have also recommended the use of ledger system regarding the quantity and value account of receipts and issues. One copy of the Store Receipt Book will be utilised for posting of the ledger.

4.6.5. *Monthly Reconciliation*

4.6.5.1. Monthly reconciliation should be effected as under :—

1. Total value of the abstract of receipts should tally with total in the Purchase Register for stock.
2. The total of the stock sub-heads in the abstract should tally with the total of the monthly receipts of the ledgers under each of the stock sub-head.

4.6.5.2. Very often payments are made for leaky gas containers resulting in considerable loss to the projects. The cubical contents of the containers should be marked on them and the pressure measured by a gauge on their receipt. These two figures would enable stores to check the bills.

4.6.6. *Intimation of Receipt to Indentors*

The intimation of materials having been received should be at once sent to the indenter by the Stores Receiving Officer. He should also watch receipts against orders placed.

4.7. **Pricing and Issues**

4.7.1. *Pricing of Stores*

4.7.1.1. According to para 118 of the C.P.W.A. Code an issue rate is assigned to an article of stores as soon as it is brought on stock on the principle that there should ultimately be no profit or loss on stock account, and should consequently provide beyond the original price paid, for carriage and other incidental charges, if any, *actually* incurred on the acquisition. This is worked out to the nearest anna and normally remains constant throughout the half year. Appreciable variations are however watched and issue rates may, and in important cases, shall at once be revised. When closing the Half-Yearly Register of Stock all issue rates have to be reviewed and revised if necessary to bring them within the market rates.

4.7.1.2. This principle of fixing issue rates has not proved practicable in the case of large stores handled on River Valley Projects due to tremendous amount of work involved in breaking up the incidental charges for each item and the time required for enquiry about the market rate for each item, etc. This work was found in arrears on almost all the River Valley Projects. The following procedure is recommended for adoption in order to meet the requirements.

4.7.1.3. *Standard Prices*—The growth in the number and complexity of stores and the need of planning and controlling stores has led to the establishment of standard prices in several commercial organisations. The existing code rule of market price to be fixed periodically involves so much clerical labour that the work remains almost invariably in arrears and it fails to provide the control data for management. We, therefore, recommend the adoption of the first purchase prices as the standard price of the store for the duration of the project, except for violent fluctuations in the prices of important stores when corrigendum can be issued. Any profit

or loss on stores due to difference in rates can be charged direct to work periodically so as to make *costing* of items realistic. Whenever violent fluctuations are noticed, the issue rates of the articles should be worked out as best as possible at actuals plus approximation of items of expenditure not known at the time of receipt and this issue rate will remain constant till such an occasion crops up again.

4.7.2. *Delivery of Materials to Central Store*

The materials along with the original Store Received Book are passed on to the Store-holder by the Officer receiving the stores. The Store-holder checks up the materials and allo's bin card No. to each item in the column provided for the purpose in the Store Received Book and makes entries in his bin card and signs the Store Received Book. The original copy of the Store Received Book is then returned to Receiving Officer who should then complete his other two copies in respect of the Bin Card No. and pass on the original copy to the ledger section (in division) for further processing. The third copy will be attached to the monthly "Abstract of Stores Received" form No. N-11.

4.7.3. *Binning of Materials*

4.7.3.1. The materials on receipt in the Central Stores should be recorded in the Bin Cards and the balance quantities in the Bin Card brought up-to-date. The Bin Cards should be kept in the respective bins or in a bound register (like the Kalamazoo visible binder). It may also be convenient at some stores to adopt Card Index Cabinet system located centrally for each sub-store. Bin Cards form the most important *initial* record, and hence great care should be taken to maintain them properly. A record of bin cards should be maintained in form No. N-9 to watch their losses. A new card should be issued only under the signature of the Officer holding the stores. There should be a separate bin card for each type of item indicating transactions of receipt and issues, with respective Store Received Book or Store Issue Book number and date. Each card should show the location of the articles in the space provided for the purpose *e.g.*, File No. _____ Rack No. _____. There should always be a separate store for all the combustible materials like Calcium carbide, cotton waste, etc. After the completion of all these entries the articles should be stored in the proper bins allocated to the items. As far as possible bins should be arranged in the sequence of the store code no.

4.7.3.2. The recommended form No. N-10 of Bin Card is given in Appendix IV. It shows the unit of count or measurement, the opening balances, the proposed maximum and minimum balances, and a record of the stock verification whenever the contents of the bins are checked by the Store Inspector. It is further recommended that the issue rate from the ledger should be entered on the bin card.

4.7.3.3. The bin card will serve the same purpose as the existing form No. 8 and is intended to replace the same.

4.7.4. *Issue of Stores*

4.7.4.1. Issues in all cases should be made on the authority of an indent in form No. N-13. The indent should be prepared in indelible ink or with copying pencil in triplicate by carbon process neatly and clearly as all subsequent accounting depends on it. One copy is to be retained by the Indentor and two copies should be presented at the stores. One copy is to be retained by the Store-Keeper and one copy should accompany the stores.

4.7.4.2. The indents must be signed by the Officer authorised to indent on the Store subject to such limitations as the Divisional Officer may impose. The indents should be registered in Stores Issue Book and after issue of the articles, all the columns in respect of rates, bin card No., and materials issued should be filled up in two copies presented to the Stores. The indents are then signed by the Receiving Officer on the Stores copy and by the Issuing Officer on the second copy in token of having received and issued the required materials. The second copy of the indent together with the materials covered by a Gate Pass if necessary should be handed over to the indenter or his agent who will present this copy at the gate for security arrangements. The Security Officer at the gate should check the store with the indent and affix his stamp 'CHECKED' on the indent and sign before allowing the materials to pass out of the Store compound keeping the Gate Pass as a record.

4.7.4.3. From the copy of the indent retained in the Stores, Issue Book should be prepared. Normally 3 copies as under Stores Received Book should be adequate but this number may be varied depending upon the size of the store organization and the accounting set-up.

1. For posting ledgers.
2. For preparing abstract of issues.
3. Office copy.

4.7.5. Preparation of Indents for Stores

The following instructions should be observed for the preparation of indents :—

1. Blank space at the end of an indent should be crossed or scored out by drawing double line diagonally across the space.
2. The Store-Keeper should fill in carefully the column meant for materials issued, as in some cases it may be less than the indent quantity or may be nil.
3. Under no circumstances should any correction be made in the indent by the Store-Keeper in respect of quantities issued except under the initials of the indenter or his agent.
4. In no case should addition or alterations be made in an indent as there is no possibility of checking whether the addition was made before or after the indent was presented. Store-Keeper should not accept unattested alterations and additions but should refuse the issue of such indents.
5. Indents should be current only for 30 days from the date of indent where a partial supply is made against one indent, the balance of the quantities should be cancelled and a fresh indent accepted if and when the supply is again demanded.
6. Indent books should be machine numbered and kept in safe custody.
7. Separate indents should be required for each sub-head of store and for each work.
8. Normally only about 6 items should be indented on one copy of an indent to leave enough space to fill in other details.

4.7.6. Accounts of Issues

4.7.6.1. According to the existing procedure (CPWA Code Para 111), the issue transactions of the entire sub-division should be abstracted monthly in a single 'Abstract of Stock Issues' (Form No. 10) which is

posted from the Register of Stock Receipt/Issues (Form No. 8), entries being made only in respect of quantities. Several transactions of a month are not shown severally in the Abstract but a single transaction is shown for the total issue to each account of work. The entries are so arranged in the Form 10 as to group them by the Stock sub-head. On receipt of this account in the Divisional Office, value account of issue is prepared on the basis of the issue rates and the storage charges.

4.7.6.2. This procedure was suitable for small stores where the number of items of the transactions were not very large. For River Valley Projects stores however this system of preparing a consolidated monthly abstract of issues is found inconvenient as it is impossible to compile the monthly account in the few days intervening the date of closing and the date of submission of the monthly account.

4.7.6.3. Having introduced the Store Issue Book form No. N-14 for classified issues, we feel it unnecessary to have to prepare the issue of abstract showing also the items of stores classified—

- (i) By sub-head,
- (ii) Work and its sub-head.

We consider that an abstract of the Store Issue Book grouped by sub-heads of stock and each group classified by work and its sub-head would serve the same purpose yet simplifying the day-to-day work without putting extra strain by the end of the account month.

4.7.7. Preparation of Abstract of Issues

4.7.7.1. The detailed procedure for the preparation of the Abstract of Issues will be as under :—

- (i) Each sectional store-holder will prepare separate Store Issue Books for different sub-heads of stores daily for the issues of the day based on the registered No. of the indents. The total value for a stock sub-head should be carried forward from page to page for an account month.
- (ii) The sectional store-holder should prepare in addition an abstract of the indents issued in a sheet maintained separately for each work and its sub-head and post it under the proper sub-head of stock *vide* form No. N-15. He should post this form daily from Store Issue Books and prepare an abstract thereof at the close of the month in a monthly abstract form No. N-16 to which one copy of the Store Issue Book concerned will form its accompaniment.

4.7.7.2. At the end of a month, each sectional store-holder will submit a set of Store Issue Books and a copy of the monthly abstract of issues to the Officer who compiles the account of the store. The Officer will, in turn, consolidate the abstracts of various sectional store-holders in similar monthly abstract form for his entire charge which will give the values of the store issued by Store sub-heads, by work and its sub-heads, and by the Fundamental Heads of Account. This will form the basis of intimating the debit to various sub-divisions and divisions work-wise and give the necessary figures for periodical reconciliation of the stock account in so far as the issues by stock sub-heads are concerned.

4.7.7.3. The main advantage of this system is that the classification of the indents by works, their sub-heads and the sub-heads of stock is carried out from day to day so that the work remains up-to-date.

4.7.8. *Loan of Tools*

4.7.8.1. To keep a watch on tools lent out we recommend the use of the Tool Card Form No. N-24.

4.7.8.2. The objects of this Card are :—

- (a) To provide a plant record of every tool, jig, gauge or other item of moveable plant which requires control.
- (b) To supply a record of plant items issued to operators; with the dates of issue and return.

4.7.8.3. The Card is designed for two purposes; first to list the employees who have used a tool and in particular, to show the person actually in possession of this plant item, and second to list all items handed over to an individual and obtain that person's initials fixing responsibility in case of subsequent claims. The method of working is to make out one card for each item of plant and one card for each employee. To distinguish the two types of card, it is suggested that one of the top corners of the plant card should be cut off.

4.7.8.4. The plant cards are filled according to plant number and the employees' cards according to personnel number.

4.7.8.5. The presentation of a job card is the authority to draw the tools, and the store-keeper notes the employee's number on the plant card and the plant number on the personnel card. He stamps both cards with the date of issue and obtains the initials of the person receiving the tool on the personnel card.

4.7.8.6. Should the tool be required, its location is known and should an employee leave the factory, it is possible to present a list of outstanding tools which should be returned before his departure. The transaction upon return completes the cycle, and by showing the stamp date to the employee, the latter assumes that his liability is cleared.

4.8. **Reconciliation of Issues, Receipt and Balances**

4.8.1.1. *Stores Price Ledger*—To watch the value account of the transactions we recommended the use of stock ledger envisaged in para 133 of C.P.W.A. Code. This ledger will form the fundamental basis for the reconciliation of the receipts, issues and balance of stock by its sub-heads as these ledgers would be posted independently of the Bin Cards from the Stores Received Book and Stores Issued Book.

4.8.1.2. It has been stated earlier that one copy of each of the Stores Issued Book and Stores Received Book should be routed through the ledger clerk to enable him to keep his posting up-to-date.

4.8.1.3. We have further suggested that each ledger should have a few pages at the end reserved to abstract the transactions of each of the articles in the ledger every month. At the time of periodical reconciliation with the financial account, a copy of the ledger abstract should be given to the accounts branch where the total of all ledger abstracts, grouped by sub-heads, can be taken without any laborious computations.

4.8.1.4. We further recommend that the financial reconciliation of the stock account should be carried out by one or two stock sub-heads each month so that the entire work does not come up by the end of a six or twelve monthly period. This reconciliation under the system proposed by us would be relatively very simple. As store has not to be repriced at market rate, the reconciliation would amount to settling the discrepancies

in the quantity account to bring out the differences between the ledger balances and the financial accounts.

4.8.1.5. As the issue rates are recommended to be fixed as standard, the discrepancy between the financial account and the ledger account would be adjusted to the project on a *pro-rata* basis to be fixed by a competent authority.

4.8.1.6. If monthly reconciliation is taken up for one or two stock sub-heads, it would be possible to locate and set right the arithmetical errors side by side each month without accumulating all the work at the end of the six monthly period.

4.8.1.7. We further recommend that the monthly review should be taken to bring out the discrepancies between the financial and the value amount of ledgers but we suggest that the adjustment of profit and loss should be deferred to the end of yearly period.

4.8.1.8. The physical verification of the ground balances should also be so planned as to complete the particular stock sub-head each month so that the quantity account also can be reconciled at the same time as the value account. If and where this system is adopted it will not be necessary to maintain forms No. 11 and 12 for six monthly reconciliation as the same will be served by the Bin Cards and the price ledgers.

4.8.1.9. We invited views of various executive and accounts officers connected with the River Valley Projects. Almost all the Officers have endorsed the views that if priced store ledgers are maintained, the existing forms P.W.A. 11 and 12 would be superfluous. Accountant Generals, Madras and Andhra mention that this system is working very satisfactorily and the reconciliation of the ledger and financial account is carried out monthly.

4.8.1.10. The rules for the maintenance of Store Price Ledgers are given below :—

- (i) One page or more of the ledger should be devoted to one item as necessary.
- (ii) One ledger should be devoted to one stock sub-head or category.
- (iii) Entries in the ledger for the receipts and issues should be initialled by the Officer entrusted with the posting.
- (iv) A certificate should be given on every Store Issue Book and Store Received Book to the effect that entries are made in ledger accordingly.
- (v) Ledgers folios should normally be arranged according to the sequence of the Store Code numbers.
- (vi) The face sheet should give an index of the items in the ledger and their code No. and page.
- (vii) Arrangement should be made by the Divisional Officer to see that a fixed percentage of the entries on the receipts and issues of the ledger are checked with Store Received Books and indents by a responsible Officer of the divisional staff, say Divisional Accountant, Store-Keeper, etc.
- (viii) Ledgers should be kept in safe custody under lock and key.
- (ix) Ledgers may be in bound registers, each page being machine numbered. Alternatively they may be in loose leaves (like kalamzoo binders) in which case each sheet should bear the signature of the Divisional or Sub-Divisional Officer at the time of issue.

4.8.2. *Detached Store Sub-Division*

4.8.2.1. It will sometimes happen that an independent store organization subordinate to the main store will have to be maintained at the site of work. Sub-Store will generally be charged to a sub-divisional office.

4.8.2.2. In such cases the Central Store should issue the materials to the sub-divisional store as 'transfer of stock' and the sub-division should maintain its own issues.

4.8.2.3. The Sub-Store should send monthly abstract of their ledgers to the divisional office for monthly reconciliation of the sub-heads concerned undertaken for reconciliation during the month.

4.8.2.4. The sub-divisional store should be kept supplied with the revised issue rates every time the rates are revised in the divisional office. Normally all such receipts whether in the divisional office or at such sub-division should be treated as divisional receipts and then shown issued to the sub-division.

4.8.3. *Stock Taking*

4.8.3.1. The P.W.A. Code lays down that in the case of special stores of construction division where there may be large concentration of stores, their physical verification should be the duty of the executive authorities and should be performed by such agency and in such details as may be decided by the local administration in consultation with the Accountant General.

4.8.3.2. Local authorities have prescribed different regulations in their own P.W.D. Code to deal with the physical verification. Often these lay down that ground balances should be checked at the end of the six monthly or yearly period. For large stores, such verification cannot be carried out within a few days at the end of a given period. It is necessary to spread the work throughout the year so that each section under various stock sub-heads can be checked at least once a year and preferably twice.

4.8.3.3. In order to achieve an independent check, it is desirable to have an Officer of adequate status specially set apart for this work. The status of the officer will depend upon the size and value of the store. On big stores, one or more gazetted officers may be appointed whereas on relatively smaller stores a stock verifier working independently of the officer in charge of the store may be adequate. The Chief Executive of the project would lay down rules specifying the duties of the verification officer which would mention particular sections of stores to be checked once, twice, thrice in a year, depending upon the importance of the sections, their transactions and the possibility of discrepancies in the ground balance.

4.8.3.4. The verification officer should maintain a register in the following form to control the programme of checking.

Checking

Stores	Code No. of Store article	Date of Check				Remarks
		1st cycle	2nd cycle	3rd cycle	4th cycle	
(1)	(2)	(3)	(4)	(5)	(6)	(7)

The verification officer should check whether any of the store checked by him has become unserviceable. If so he should submit a report showing

the articles, quantity and the condition of such store, indicating the action necessary for its better preservation. Such unserviceable store should then be dealt with in accordance with the Code Rules.

4.8.3.5. *Instructions*—The following instructions should receive special attention :—

1. The subordinate in charge of the store should render full assistance to the stock verifier in his work, by rendering him the necessary cooperation.
2. The Bin Cards should be brought up-to-date by stores organization before a section is put to verification and the balances shown therein got certified as correct by Accounts Branch.
3. The stock verifier should prepare a list of the articles in the section to be verified from the Bin Cards and record the bin card balances, the ground balance and the difference in form No. N-19.
4. Articles of allied nature should be verified at the same time to see whether there is any inter-mixing of these.
5. The check should be carried out in the presence of the representative of the stock-holder so that the necessary assistance can be rendered to the verifier to identify and count the articles and discrepancies minimized.
6. Where weightment of large quantities is necessary, the number of weight may as alternatively be determined by weightment and count on the basis of an average sample weight or count of quantities selected at random for articles like coal, coke, etc., the materials may be verified on the basis of stock measurements and standard weight per unit of volume. Small discrepancies likely to arise in sure methods of check may be ignored.

4.8.3.6. Four copies of the verification report should be prepared which should be utilised as under :—

1. to the Chief Executive of the Project;
2. to the Officer holding the stock;
3. to the sectional stock-holder;
4. verifier's own copy.

4.8.3.7. The Verification Officer should initial and date the bin cards of articles checked by him. The Officer in charge of the store should scrutinise the discrepancies. If there are any arithmetical errors these may be set right under the initials of the verifier; the shortages and excesses should be dealt with in accordance with the para 134, C.P.W.A. Code. The discrepancy report should be finalised and action taken within one month of checking.

4.8.4. *Treatment of Stores Deficiencies*

4.8.4.1. Deficiencies should be carefully inquired into with a view to discovering the cause. This may consist of one or more faults, such as :—

1. Issue of materials without requisition.
2. Issue of more materials than requisitioned, either by failure to alter a requisition note to agree with issues, or by guessing quantities.
3. Mis-appropriations of goods from store.
4. Wastage of stores through careless handling, faulty protection, or natural causes.

5. Failure to make the necessary charge for goods sold, no requisition note having been issued.
6. By merely giving 'Good' measure or weight.
It is simply the 'Scale Pull'.

4.8.4.2. Whatever the reason for the shortage, certain actions are necessary :—

1. The deficiencies must be written off the stores accounts, and the Stores Control Account.
2. The authority for writing off, and clearing up, must emanate from a person of responsibility, preferably the head of the department.
3. They must be charged upto something, or to somebody, and what, or who this is, can be determined only in the light of the fullest knowledge available.

4.8.4.3. Assuming the losses are bonafide, and as an indication of how they may be treated, it is suggested that efforts be made to find out what jobs have been undercharged (in quantities) with stores issued, so that errors may be rectified. The cost accounts should be of great help in this connection.

4.8.5. *Writing out Surpluses and Deficiencies in Stores Accounts*

4.8.5.1. It has already been recommended that surpluses and deficiencies be written out of the books without delay. The reasons for prompt action are :—

1. The stores accounts are inaccurate and exhibit a false view of the actual position.
2. The cost accounts are also wrong and should be corrected.
3. If the seriousness of inaccuracies is not impressed on all who have been responsible for them, the full benefit of a system of stores accounting is not obtained, and there is no incentive on the part of the delinquents to be more efficient.
4. An unscrupulous store-keeper can, if he so wishes, rectify surpluses either by pilfering, or by deliberate issue of materials without, or in excess of, proper requisitions.
5. The Store-keeper can also try to put the deficient balances right by giving short weight of measurement or by other means more or less suitable, according to his ingenuity.
6. Surpluses and deficiencies may balance one another in whole or in part, and in consequence large disparities of both descriptions may be wholly or partly obscured.

4.8.5.2. The treatment of surpluses should be based on the results of an inquiry of the same description as that suggested in the case of deficiencies. Accounts that have been overcharged in issues should be put right.

4.9. **Other Stores**

4.9.1. Apart from stores held in stock under central stores, the following types of stores also have to be handled and their accounting done :—

1. Charged Stores;
2. Returned Stores;
3. Scrap, Empties and Surplus Stores;
4. Tools and Plant.

4.9.2. *Charged Stores*

With the Committee's recommendations for passing all stores through 'Stock' and discontinuance of M.A.S. Accounts on River Valley Projects, the above type of stores must disappear. If, however, such stores do appear these should be kept apart from the regular stores prominently marked as 'CHARGED STORES'. The transactions of issue of such stores should also be passed through Stores Issue Book which should be marked prominently as "Charged Stores."

4.9.3. *Returned Stores*

4.9.3.1. There will be two types of materials returned to the Store :—

- (a) New stores remaining un-utilized on completion of works.
- (b) Old stores salvaged from works.

4.9.3.2. Such articles should be returned to the stores so that their future utilisation should be planned. These should be presented to the store accompanied by return stores note in the form No. N-17. The Central Store will then deal with the articles so received in the same manner as the account in the S.R.B. form.

4.9.4. *Scrap, Empties and Surplus Stores*

These should be given the same treatment as outlined for 'Returned Stores'.

4.9.5. *Tools and Plant*

In case of Central Store organization being established on projects, the articles of Tools and Plant should also be handled by it and account kept according to the existing rules.

4.10. *Store Management*

4.10.1. *Location*

Store should be located at sites where the minimum of carriage of materials to the various departments served is involved. They should preferably be close to the Railway Station. Very often store buildings not originally intended to serve in this capacity are used to store the goods received in the earlier phase of a project. Many such buildings are make-shift, but the exercise of ingenuity can lessen the disadvantages of this nature. It is desirable to plan out storage building carefully and rather on the liberal side to avoid damages and deterioration of the stores. We noticed that almost all the projects stores did not plan and construct their buildings adequately in advance and in almost all the cases the estimate on the space required enhancement.

4.10.2. *Space*

4.10.2.1. One ever-recurring and chronic difficulty is the lack of space. This may be alleviated by the use of gangways not wider than is necessary to handle, in and out, the large and awkward parts. In ordinary circumstances 2 feet and 2 ft. 6 in. gangways will be sufficient.

4.10.2.2. The heavier goods should be stored in the lower bins which should be kept bigger. If the bins run higher than 6 feet the lower bins should be strong enough to permit a man to climb the first three or four bins. Where necessary, portable ladders should be provided to approach the upper portion of racks so that the space can be utilised. Racks, 10 ft. high, should be suitable. There should be at least 4 ft. clearance from roof to the top of bins to prevent damage due to sweating. The provision of extra space on the top also lessens heat effects for men working at the top of the bins.

Ideally, only one type of item should be stored in each store bin but frequently many types of items have to occupy a bin due to lack of space. In this case the bin should be partitioned so that the different types of items are segregated. Where it is impracticable to partition the bins, the items selected to occupy the same bins should differ from each other as much as possible. Orderly piling of the items one upon another in tiers within the bin makes best use of the space in the bin and also helps in quick counting whenever required.

4.10.3. *Types of Bins and Racks*

Steel racks with bigger bins at the bottom and smaller at the top are recommended for the storage of spares, electrical materials, small tools and general store of lighter types. Ready-made steel racks to standard dimensions are available in market. At some places masonry racks can be used with advantage for the storage of heavy goods like ferrous and non-ferrous metals, paints, etc.

4.10.4. *Lighting*

Storage racks are generally built up high, because of the limitation of space. Natural lighting is therefore generally poor. The correct and prompt service requires good lighting of stores; and this can be assisted by painting in light colour the walls and ceiling such as aluminium paints. The provision of portable inspection lamps, which will shine right into any bin should invariably be made even with an adequate over-head lighting system.

4.10.5. *Cleanliness*

Dust collects quickly in stores, particularly where the floor is of concrete. Washing the floor is ineffective and the concrete should be treated with some Sodium silicate product in order to keep down dust. A vacuum cleaner is desirable for the same purpose.

4.10.6. *Protection of Stores*

All the stores after inspection should be wrapped in original wrappers after greasing. If these are torn out in the process of checking them, new wrappers be provided whenever required. Special care should be taken in storing all the small spare parts so that they are absolutely protected against rust, etc. It is desirable to wrap assemblies in transparent coverings, and/or paint the articles with anti-rust paint in order to save the trouble of greasing and degreasing. The store should be made absolutely leak- and damp-proof. It should be the duty of the Officer In-charge of store to see that proper rust-proof paints and disinfectants are used freely to see that no damage is being done to any item of stores under his charge. The gaskets are very delicate parts to handle and are liable to be damaged by dampness, worms, etc. It is recommended that separate drawers in cabinets should be used to arrange the gaskets of various sizes. The smaller ones can easily be arranged in the space within the larger ones. Tyres, tubes and rubber goods should be placed in a dark and cool room to guard them against deterioration by heat and light as rubber goods are very sensitive to these.

4.10.7. *Lettering*

It is desirable that uniform and well-considered system should be used for numbering bins, compartments and stocks. The letters and number should be at least 3 in. high, and placed at eye level, if possible. Numbers

should be assigned in a uniform manner, and they should run from left to right uniformly throughout the store, and from bottom to top of the store so that the bin number also indicates in a general way its location. Colours may be used for identification of materials if desired.

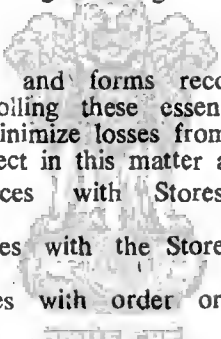
4.10.8. *Fire Protection*

4.10.8.1. Special attention should be paid to the fire hazard. No oils, varnishes, inflammable compounds, celluloid, kerosene, petrol, packing materials, etc., should be stored with other materials. Materials of this nature should be stored separately, at a safe distance from other stores so that the risk of spreading fire is minimised. Fire extinguishers and fire buckets should be placed at different places in all the stores in sufficient numbers for emergencies. Fire fighting drills be held to fight fire in emergencies. Fire fighting squads should be formed from amongst the staff who may be given a small allowance to keep them alive to the sense of their duty. The store compound should be served with a network of pipelines and fire-hydrants, supplied from water storage under adequate pressure to bring fire hoses into operation whenever needed. It would be desirable to consult fire-fighting experts and follow their advice about the lay-out and arrangements of fire-fighting.

4.10.8.2. Notice boards both in English and the language of place should be placed at the entrance of stores houses and on other places where materials are placed prohibiting smoking in the store house, etc.

4.10.9. *Security Measures*

4.10.9.1. The methods and forms recommended in all phases of accounting for and controlling these essential commodities have been designed to eliminate or minimize losses from pilferage. Notable instances that have a very potent effect in this matter are :—

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Checking invoices with Stores ledger; 2. Checking invoices with the Store Received Books; 3. Checking invoices with order on suppliers; 4. Detailed stocks and stores account; 5. Making frequent spot test checks on stores, etc., by the internal audit or other staff with the stores ledger accounts and Bin Cards; 6. Taking a complete periodical stock and comparing the finding with Stores Ledger Accounts; 7. Instituting periodical returns from departments, branches, and stores to head office; 8. Comparing and linking up stores received with the financial books; 9. Internal automatic check by spreading the work over as many persons as practicable; 10. Effecting checks on issues by reference to the sale and user; 11. Branding by distinctive mark, plant, etc., for retention on premises; and 12. In respect of issues to jobs a good check on consumption is effected by 'measuring up' the work done. A competent person can compute with considerable accuracy the quantity of materials required in a given product, taking into account unavoidable |  <div style="display: inline-block; vertical-align: middle; font-size: 2em;">}</div> <div style="display: inline-block; vertical-align: middle;"> <p>Ensuring that all goods paid for are taken on to store charge and fully accounted for.</p> </div> |
|---|--|

wastage. The figures comprised in the details as to materials used (as shown by cost accounts) help to locate pilfering and unnecessary wastage by the workers on the job in question.

4.10.9.2. In certain cases, it may be thought appropriate to institute direct physical precautions against theft of materials by methods such as :—

- (a) the use of clothing of overall without pockets by those who handle stores of small dimensions but of appreciable value;
- (b) the examination of persons leaving the premises by inspectors or other persons; and
- (c) the checking of goods taken out of or off the premises, by doormen, yardmen, etc., by a comparison of the declared contents of packets and the label thereon (filled in by one person and fully verified by another, adding his signature) with delivery and issue notes, invoices, or pass out orders held by the person removing the goods.

4.10.9.3. The foregoing remedies to avoid or minimize pilfering are not equally applicable to all circumstances. As to the most appropriate methods to adopt, much depends on factors such as :—

- 1. The nature of the stores (some are small and valuable, others less easy to steal and difficult to remove unnoticed);
- 2. The location of the stores building or compartment; and
- 3. The presence of other employees therein. (It is more difficult to pilfer articles if somebody else knows it.) Each case should be considered on its merits.

4.10.9.4. The Security Staff should be provided for all stores in adequate numbers and where necessary Police Guards should be provided. The Store yard should also be well lighted at night.

4.11. Lack of Trained Personnel

4.11.1. Raw Officers and Subordinates are often placed in charge of large stores without knowing anything of store management, or having familiarity even with the names of the stores. This lack of knowledge and experience coupled with the absence of Code numbers results in wrong physical issues of stores and or in wrong accounting subsequently, creating confusion all over.

4.11.2. That personnel should be trained before being put in charge of stores.

4.12. Insufficiency of Staff

4.12.1. Some of the difficulties in this connection will disappear as soon as the store personnel is given proper training and proper rules and procedure for stores accounting and management are introduced. On projects having big stores involving thousands of daily transactions, accounting machines can be used with advantage resulting in speeding up of work and greater degree of accuracy. They are, however, difficult to maintain, expensive on the initial cost and the hiring charges are high. Their use can, therefore, be recommended at present only to projects which are largely mechanised and have costing cells.

CHAPTER 5

COST CONTROL

5.1. Contents of a Project Report

5.1.1. A project report should be able to present to the reader a complete picture of the socio-economic effects of the undertaking and comprises items like the topography, geology, hydrology, climate, communication, soil characteristics, ground water conditions, engineering plans, estimates of quantities and cost, analyses of rates, programme of work, schedule of the annual requirements of equipments, men, material and stores and funds, specifications of work and financial forecast. It should also be accompanied by the following documents :—

1. Schedule of Basic Wages.
2. Schedule of Basic Rates of Materials.
3. Schedule of transport rates.
4. Equipment prices and their use rates.
5. Basic outputs of men and machines.
6. Standard methods and units of measurement.
7. Classification of Accounts.
8. Estimates.
9. Codification of stores and accounts.

The first five items of the above have been dealt with in Part I of the report.

5.2. Standard Methods and Units of Measurements

5.2.1. The units to be adopted for bidding purposes and for measurement and payments of work should conform closely to the Standard Estimating Practice. Typical units are given in Annexure I.

5.2.2. The Institute of Engineers (India) has brought out a publication entitled 'The Standard Methods of Measurements of Buildings and Constructional Works,' which deals mainly with items relating to the building industry. We recommend that a comprehensive Manual on similar lines be got out for the River Valley Projects.

5.3. Classification of Accounts

5.3.1. A standard classification of the items of work is essential for the correct compilation of accounts and reconciliation of figures between costing and accounts sections.

5.3.2. The present system of classification fails to meet the present day requirements of the large River Valley Projects, which contain numerous and varied features that they cannot be compressed within the English alphabet and very often leads to confusion in accounts and the inability of the project officers to furnish cost figures for various items of work in spite of the best effort.

5.3.3. A simple system of classification of estimates and accounts is given in Appendix II.

5.4. Codification of Items of Work and Stores

5.4.1. Accounts and stores are not codified at present. They have to be described and result not only in waste of time in writing but often in

serious accounting mistakes, which become difficult to locate. It is, therefore, essential that a proper code be laid out for all items of stores and accounts and the same code be followed in the preparation of estimates. (Appendix II and Chapter 4, para 4.2.3. give the code).

5.5. The Estimate

5.5.1. Estimate being the foundation for cost control should be prepared with meticulous care by a competent Engineer, thoroughly familiar with construction methods and costs. It should be prepared in such detail and in such a manner that may enable the cost engineer to distribute the cost into elements of work with a view to making comparison of actuals with the estimated figures possible. If this is not done, cost reports will not be readily assimilated and make comparison at a later stage, difficult, if not impossible, thereby rendering the cost section inoperative and ineffective.

5.5.2. The estimate indicates the probable cost and not the actual one. The agreement of the former with the latter will depend upon the estimator's skill or accurate use of good estimating methods and his judgement or the correct visualization of the work. The preparation of an estimate of a real value is a skilled work and calls for the highest training, wider experience and sound judgement.

5.6. Physical Quantities

5.6.1. A River Valley Project involves expenditure in two forms, viz., structural and physical. The estimate takes off quantities in units of work from the drawings in terms of brick-work, concrete, stone masonry, etc. These quantities called "structural quantities" are priced at composite rates called "unit rates" or "item rates" for purpose of estimating. These quantities should also be converted into physical quantities such as materials, labour, plant use, expendable stores, etc., which can be precisely priced at prevalent wages and basic market rates of materials. Appendix IV contains a form N-33 recommended for estimating purposes.

5.6.2. The following items have a great bearing on the actual cost of a project:—

1. The Contract.
2. The Contractor.
3. Planning the job.
4. The Organisation.
5. Cost Control.

These are dealt with in the succeeding paragraphs.

5.7. The Contract

5.7.1. Construction may be classified as follows

- (1) The Lump Sum provides for the payment to the contractor on the basis of a total amount to cover all work and services required by the plans and specifications. Its use is indicated where the types of construction are largely standardised and where a variety of operations is required, making it impracticable to break down the work into units. As a prerequisite the plans and specifications should be comprehensive and should show in complete detail the requirements of the work. Work orders showing deviations after the contract is

signed prove expensive and even lead to controversies and disputes. Furthermore, when the plans are indefinite the contractor is forced to gamble on the uncertainties or to increase his bid to cover the worst conditions to be expected. Consequently high costs to the Government will result if complete information is not furnished. If these hazards are avoided, the Government has the advantage of knowing in advance the exact cost of the work, and the measurement of work and payment thereof are considerably simplified.

- (2) The Unit-Price contract includes a breakdown of estimate into number of units of each type of construction and a price for each unit. When the work requires large quantities of relatively few types of construction and the volume of work cannot be exactly determined in advance, the unit price contract has many advantages. It is elastic as reasonable variations may be made in amount of work to be done without formal deviation from orders as long as the changes are restricted to the tendered items. The plans and specifications must show the nature and details of the work, but its limits may be left more or less indefinite, the magnitude and scope of the work being indicated by the estimate. Under these conditions the contractor is not forced to gamble on uncertain conditions.
- (3) Cost-plus-a-Percentage of Cost contract provides for the contractor's profit on the basis of a fixed percentage of the actual cost of the work. In common with all negotiated contracts this type permits the beginning of construction before the plans are completely developed, resulting in an important saving of time in the completion of urgent projects and the Government may make any desired changes in the plans and specifications as the work progresses. It has the disadvantage to the Government that the contractor's compensation is increased by an increase in construction cost. Therefore, there is no incentive for the contractor to economise during the construction.
- (4) Cost-plus-a-Fixed Fee eliminates the above defect. The contract may be cost-plus-a-fixed fee type which provides for payment to the contractor of the cost of the work plus a fixed amount as fee which is determined from a consideration of the character of the work and its estimated cost. Thereafter the fee remains fixed although the actual cost of the work may vary from the estimate.

As an added incentive to the contractor to keep the cost of the work at a minimum, a profit-sharing clause is sometimes added to the cost-plus-a-fixed-fee contract. Ordinarily, the amount of the fixed fee is based on a preliminary estimate of the cost of the work. The profit-sharing provision allows the contractor to receive a share of any saving if the actual cost should be less than the original estimate.

5.7.2. One of the principal arguments against cost-plus-a-percentage type of contracts is that the owner has no way of knowing in advance what the work will cost. This objection may be overcome to a considerable degree by placing a maximum limit of the cost of the work. That is

to say the contractor is reimbursed for the actual cost of the work plus his fee, provided that the total amount does not exceed the maximum limit established in the contract. If the total amount should exceed the maximum limit the contractor is held responsible for the excess and receives no compensation over the guaranteed ceiling price. This type of contract removes some of the uncertainties from the ordinary cost-plus-percentage contract but requires that the plans and specifications for the work be sufficiently developed to permit the establishment of a reasonable ceiling price.

5.7.3. A contractor may deliberately inflate the construction cost in order to obtain the corresponding increase in his pay. This may be done by padding payrolls, taking commissions on materials purchased, and the like. For these reasons we do not recommend the cost-plus-a-percentage form of contracts for general use. Extra work and change orders may, however, sometimes be handled conveniently under this system.

5.8. Selection of Type of Contract

5.8.1. It is advantageous to adopt a competitive bid contract when sufficient time is available to work out the plans and specifications in detail. Generally, however the unit price form is used for all civil engineering contracts and we recommend it for general adoption.

5.8.2. A negotiated contract will be indicated when it is desirable to begin work before the completion of detailed plans and specifications, thus assuring earlier completion of the work when the requirements of the project cannot be determined definitely in advance of the early phases of construction; or when the nature of the project is such that an accurate estimate cannot be made for bidding purposes.

5.8.3. It sometimes happens that the Government contemplating a construction project desires to deal with only one party for all services, both engineering and construction, in connection with the work; this is a so called "turn-key" or "package" job. This type of contract may be drawn either on a firm price or on one of the cost plus forms and the planning, design, plans, specifications, and construction services are included under one contract. Combined engineering and construction contracts of this nature are not, in our view, in public interest.

5.9. Documentation and Tenders

5.9.1. The specifications are an integral part of a project whether the work is to be executed through a contractor or departmental agency. Their composition, therefore, must be logical and systematic, otherwise they will result in repetition, omissions and conflicting statements which lead to confusion and disputes with contractor during and after the construction and can thus considerably add to anticipated costs.

5.9.2. Looking to the number of controversies arising in the interpretation of contract forms and specifications, we consider it necessary that greater attention should be paid to contract documents to avoid all ambiguities. It would be recognised that the preparation of documents for River Valley Projects is best done by qualified quantity surveyors experienced in taking off and pricing.

5.9.3. We like to bring out one important aspect of contract documents. It often happens that junior officers, knowingly or unknowingly,

make commitments to contractors which have a far-reaching effect on the contract while they have not the requisite authority to do so. On the other hand, the contractor seldom, if ever, places himself in the wrong, fortified as he usually is with advice from astute lawyers. It is, therefore, very necessary that agreements should contain a clause invalidating all commitments from any but the legally authorised sources. Also, on large projects, legal advice should freely be available to the Contract as well as the Claims Sections of the Project.

5.10. The Contractor

5.10.1. One of the most important items for the successful execution of a work is the selection of right type of a contractor.

Selection of Contractor

The selection of the contractor should be based primarily on the following considerations :—

- (a) Previous experience in the particular type of work.
- (b) Reputation for fairness and excellence in performance.
- (c) Quality and experience of personnel.
- (d) Available working capital.
- (e) Available plant and equipment.
- (f) Normal volume of work per hour.
- (g) Incompleted works in progress.
- (h) Available work capacity (difference between normal volume and incompleted work in progress).

Information along these lines should be collected and classified systematically preferably by some form of questionnaire. Analyses of these data will usually indicate one or more contractors suitable for the work. A pre-selection of bidders is, therefore, recommended.

5.10.2. The necessity to advertise for bidders, to accept bids from all who are inclined to compete and to award contracts to the lowest possible bidders, introduces problem in the awarding of contracts for public works which are not encountered in private construction where the list of bidders may be selected without restriction. For a bidder to establish responsibility under these conditions, usually means the furnishing of the required security and a record free from defaults or proved honesty. Thus incompetent and over-extended contractors and those with inadequate financial resources may be placed, more or less, on an equal basis with responsible bidders in the compilation for the awarding of the contract.

5.10.3. The employment of unqualified contractor usually leads to difficulties during the operation of the contract. Also, slow progress, unsatisfactory quality of work and excess cost may result. Moreover, incompetency is one of the very important factors in contractor's defaults which always causes inconvenience, delays and extra cost to the owner. To avoid or reduce these difficulties, the pre-qualifications of bidders are recommended. The object is to determine before the contractor is allowed to bid, whether he is responsible and competent to satisfactorily complete a given construction contract.

5.10.4. The pre-qualification procedure requires the contractor to submit a formal application to bid. The application contains sufficient information on the lines outlined in para 5.10.1. The consideration of

these factors will usually eliminate unfit contractors from the list of those permitted.

5.10.5. The chief advantages of pre-qualification are that lists of competent bidders will be established in advance when there is sufficient time to investigate contractors' qualifications. When all the bidders are qualified, the contract is simply awarded to the lowest bidder and the public official, who awards the contract, is saved the embarrassment of rejecting a low bid from an unqualified bidder. Contractors are saved the time and expense of preparing bid for work in which they are unqualified by inexperience and lack of financial or other resources. Failures and defaults of contractors during construction are minimised by the elimination of unfit contractors, which results in the saving of time, cost and construction work.

5.11. Organisation

5.11.1. After the estimate has been sanctioned and the agency for the execution of work decided, a suitable project organisation has to be set up. A sound organisation should satisfy the following requirements :—

- (1) Separation of functions, such as accommodating, procurement, engineering, laboratory control, etc., etc.
- (2) Setting their line of functions with their logical sub-divisions so that there is no over-lapping or conflict and so that no individual receives orders from more than one individual—his immediate superior. He may, however, receive aid and advice from staff officers or assistants.
- (3) Clear-cut distinction between line and staff functions and functional control.
- (4) Clear-cut specifications of each job.
- (5) Suitable and adequate delegation of authority and responsibility for each member.
- (6) Selection for each position and most suitable person without fear, favour or political influence.

5.12. Objectives of the Organisation

5.12.1. The objective of organisation is the actual superintendence of operations and, its prime purpose is to obtain maximum of production at minimum expenditure. To achieve this end, it should know :—

1. How the actual production can be made to approach the estimate.
2. The production that is actually being obtained.
3. The best production that can be obtained.

5.12.2. To make actual production approach the theoretical best estimated demands competent planning, keeping men and machines in good working conditions, and above all, furnishing sufficient incentive to the workers to ensure their best performance. To determine the theoretical best production that can be obtained, time and motion studies are employed.

5.12.3. A typical organisation chart for a large River Valley Project is given in Annexure 2.

5.13. Planning the Job

5.13.1. The construction of River Valley Projects is essentially a manufacturing process and as such it is affected like any other industry by all the problems of economics, management, labour and production. It,

however, differs from the latter in one important respect *e.g.*, that while in the production of the most of the industrial commodities, manufacturing methods are more or less standardised to facilitate mass production in a centrally located manufacturing plant and finished product is transported to its place of use, in the construction industry, the product is manufactured at its place of use and an individual plant is necessary for each construction job; also each project is peculiar in characteristics. It is particularly so with storage schemes, where features of one project are vastly different from those of another.

5.14. Flow Designs

5.14.1. Flow diagrams are used more and more in the construction industry to show the position and capacity of each stationary machine or operation, including the method of transportation from one to another. The diagrams are of great use in planning the work. They are not to be drawn to scale and may be shown in plan or section. A simple diagram for concrete dam of Vaiterna is shown in Annexure I.

5.15. Planning Charts

5.15.1. Charts, Annexures 3—9, show diagrammatically the various steps used in planning expenditure on labour, equipment, materials and miscellaneous items of a project.

5.16. Planning Plant and Equipment

5.16.1. The planning of suitable equipment is an intricate job as it does often require a composite group of machines to work in harmony with each other so as to achieve the maximum efficiency as regards output and cost. Several combinations have to be investigated so as to arrive at the best, keeping an eye also on their availability in time. Equipment time schedules are worked out to show the various prices of major equipment and the duration for which they are required. An illustrative chart showing the equipment schedule for a concrete dam is shown in Annexure 10.

5.17. Planning of Labour

5.17.1. It is necessary to determine sequence of operations and trades so as to plan proper labour requirements of a job. An illustrative chart, Annexure 15, shows a typical force report.

5.18. Control of Expenditure

5.18.1. Exercise of control over expenditure is an integral part of good management. The cost is not an end in itself but the object should be to provide means whereby costs can be controlled and cut down. Cost control should increase efficiency by indicating waste, leakage of materials, waste of time, and uneconomic overheads.

5.18.2. Most of the large River Valley Projects are being executed under a field organisation which works on a functional basis. Under such a set-up no divisional Officer would know or can be responsible for the over-all cost of a project or that of any unit thereof. The work being divided on a functional basis, has to be priced for each function and then collected to know overall cost and unit rates. Indirect or distributive costs constitute a large part of doing a particular kind of work, especially where a large amount of plant and equipment is involved. The use of extensive construction plant serving many parts of a project simultaneously has made

the cost distribution mandatory. Therefore, the need for a *Cost Section* is now keenly felt on every large project. There is a general consensus of opinion both among Engineers and Accounts Officers consulted by the Committee that there should be a Cost Section besides the present accounts organisation for each sizeable project.

5.19. Cost Section and its Functions

5.19.1. The Cost Section is to function as an independent fact-collecting agency and compiling data for presentation to executives in a form most serviceable to them. Its major objectives are (i) to furnish the maximum amount of information from both operation and cost angles, (ii) to present in the most practical way the facts that reveal actual performances and to aid in the attainment of high standards of efficiency, and, therefore, of realisation of maximum economy, and (iii) to aid in determining operational policies. In short, cost accounting would aim at accounts for operators instead of accounts for accountants. It is thus more an adjunct to Engineering Departments particularly of estimating and planning than an adjunct to general accounting department.

5.20. Costing System

5.20.1. The costing system installed should be flexible, so that it can be readily adapted to changing conditions. It should be simple and practical to operate so that it may be conveniently kept up to date in the peculiar difficulties of construction jobs. We, therefore, consider that a complete review of the system and the forms in use should be carried out from time to time, in order to eliminate any unnecessary features and to adapt the system to suit the conditions under which a project is executed.

5.20.2. The system will serve no useful purpose unless the data compiled is used by the technical personnel to study and assess the progress made on each job, and to compare labour and machine utilisation efficiency with that best attained under similar conditions.

5.21. Conditions Essential for an Efficient Costing System

5.21.1. The conditions essential for an efficient costing system are :—

- (i) That arrangements and designing of the cost accounting system should be suited to the organisational set-up and the methods of construction on a particular project, so that production and cost control are possible at all levels of management down to the smallest field of activity.
- (ii) That the costing organisation should be conversant with the technical aspects of the work, to detect flaws in the original data and to offer constructive criticism to improve efficiency.
- (iii) That promptitude and utmost regularity in the supply of data to the organisation should be ensured.
- (iv) That where the availability of actual data is not possible in time, best approximation should be made and subsequently corrected from time to time.

5.21.2. To secure the best results, it is desirable that the cost organisation should work under a competent Cost Engineer assisted by a trained staff. The Cost Engineer should be able to comment on (i) operations which are costing more than the estimates, (ii) the possible avenues of saving and (iii) the total ultimate cost of the project. This organisation

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should be responsible to the Chief Executive of the project, who should, on the basis of the cost reports and comments, be able to take effective and timely measures to control the project.

5.21.3. Promptitude in cost reports is an important requirement of a successful control system. The Project Manager needs information that makes possible correction of conditions while the work is being performed. Whether report should be daily, weekly or monthly, will depend on the needs of a particular section of the project organisation. They must be simple, timely and up-to-date.

5.21.4. The success of cost department is largely dependent on the interpretation of operating results as determined from periodic cost reports which should clearly indicate whether variance is due to volume or labour costs. Control of physical standards which speak for themselves is more valuable and it is our view that the cost accounting section should lay greater emphasis on quantity engineering data than on rupee-cost figures. Data related to labour output, plant output, material consumption account is more useful to the Engineers for the cost control and for framing a reliable basis for future planning and estimating. It, therefore, follows that estimates of physical quantities and performances if prepared in a form comparable with costing procedure would be helpful in establishing closer co-operation and understanding between the cost and operating departments and a greater recognition would result on the part of the cost section of the problems faced by the operating departments.

5.21.5. Certain assumptions would be essential to produce timely cost reports. Some of these are :—

- (i) Provision for repairs and overhauls of special equipment. Assumptions and procedure of accounting has already been dealt with in Chapter 6.
- (ii) Unpaid bills have to be accounted for for cost purposes.
- (iii) The procedure of pricing the stores should be based on "Standard Rates" so that articles may be priced immediately as they are issued. Need for reflection of current prices in cost figures is not so important in civil engineering works.

5.22. Distribution of Cost

5.22.1. The distribution of cost relates to the assigning of expenditure, as represented by original documents such as pay rolls, invoices of the materials and supplies to each item of work in the same manner as planned by the estimator. Intelligent cost distribution calls for a knowledge of the plan of construction, the purpose for which all labour and materials are used and construction methods followed in the field, besides a knowledge of construction accounting principles. This would emphasise the necessity of estimating and cost distribution adhering strictly to the standard classification of accounts.

5.23. Cost Reports

5.23.1. In developing the usefulness of the cost reports different classes of executives and their needs must be understood and recognised. Junior executives (Overseers) who are concerned with details of every-day operations should have detailed reports in order to enable them to control cost. These men are in close contact with expenditure primarily for labour and materials on operations under their charge and with daily yield. The costing section or on small projects the overseers themselves should be

able to produce daily the cost per unit of physical quantities or structural quantities on the type of work under costing. These reports should help these Junior Executives to control wastes of all kinds by control on the activities of operators and machines placed under their charge. The scope of these reports is necessarily limited but these reports form the foundations of costing system and cost control. We may call the reports at this level as "Daily Output Reports".

5.23.2. Executive Engineers who have overall responsibility for functions entrusted to them exert their influence on cost and operating results through direction and organisation and have to adapt the work to overall conditions of a project for economy and find solutions for factors which retard output. By comparing actuals with estimated costs, variances are obtained which must be analysed in reports as to causes. The Project Manager can thereby know the efficiency of men and machines on the job.

5.24. Field Reports and Records

5.24.1. The Cost Section would require the following :—

- (i) Daily pay rolls and acquittance rolls with output report.
- (ii) Daily materials' report—received, issued and on hand.
- (iii) Daily equipment performance report.

5.24.2. The reports may be prepared by Assistant Executive Engineers, Foremen, Time-keepers or Clerks but should preferably be seen and signed by the Executive Engineer. In addition to this, each official should maintain a daily diary in which all essentials regarding the work under him are recorded. Similar weekly consolidated reports should be prepared for the Chief Engineer's office if it be other than the Project Manager. Monthly consolidated reports ought to be prepared for the Government.

5.25. Pay Rolls and Acquittance Rolls

5.25.1. Briefly speaking, we have recommended adoption of a Time-keeping system on the lines of the one used at Bhakra, the introduction of a daily time card prepared by each Foreman, Labour Ledgers and Identity Cards, each carrying a photograph of the worker.

5.26. Daily "Materials" Report

5.26.1. The recommendations are that Stores Receipt Books and Stores Issue Books should replace measurement books and so far as the receipt and issues of stores are concerned, the Bin Cards and Stores Ledgers should be used instead of the Register of Daily Stock Receipt and Issues, Half Yearly Balance Return of Stock and Half Yearly Register of Stock.

5.26.2. The collecting and recording of material costs will be done in the main office and checked against foreman's field reports.

5.26.3. Except for violent fluctuations in the market, prices of any principal commodities and prices of stores be kept fixed for the duration of the project. Any losses or gains on stores during the year should be adjusted by debits or credits to work at the end of the year. It is, therefore, simpler to report in most cases, the total work performed to the end of the week or month, leaving it to the office to determine individual weekly or monthly progress by deducting the quantities in the previous report from these in the last report.

5.27. Collecting and Recording of Machine Costs

5.27.1. Although mechanical equipment has been used in this country on large projects during the last century, it was being done on a comparatively small scale. Machines, however, play a very important role in the present-day projects and cost colossal amounts. A proper system of collection of field data and its processing in the office is, therefore, very necessary for the well being of the project.

5.27.2. The cost section should maintain an "Equipment Register" in form N-25 which will provide information regarding the type of equipment, equipment number, from whom purchased and date of purchase, size, capacity, original cost and a record of use rate/hr. or ownership cost/hr. The record should show the estimated economic life of machines and their cost from which the depreciation rate is determined to which a percentage for repairs and overhauls is added in tune with the recommendations made in Part I. This will ensure ownership cost record of all equipment on the job.

5.28. Daily Reports

5.28.1. Daily reports show the work done during the day. It is easy to report because the foreman or time-keeper knows the number of units performed during the day and where the work started and was left off.

5.29. Daily Report Forms

The following forms are recommended :—

5.29.1. Daily Time Check Sheet (Form No. N-22) gives at a glance the result of checking of the labour by the Time-keeper during the working hours.

5.29.2. Daily Equipment Report (Form No. N-26) gives the no. of hours each machine worked on a particular job.

5.29.3. Materials and stores issued to any foreman during the day are reported by the Foreman on Form No. N-27.

5.29.4. Details of field repairs carried out on any machine during the day appear on Form No. N-37.

5.29.5. Daily accident and breakdown reports appear on Form No. N-38.

5.29.6. Daily reports for the use of automobiles are given in Form No. N-28.

5.29.7. Daily output report for machine is given on Form No. N-29.

5.29.8. Daily Mass Concrete Report is sent on Form No. N-39.

5.29.9. Report on miscellaneous items of work, e.g. laying and vibrating, form work erection and stripping, cleaning and curing, finishing, etc., are made on Form No. N-32.

5.30. Units of Daily Measurement of Work

5.30.1. The units of measurement of work performed will be the same as the units in the estimates. The kind and amount of information required for determining unit costs will depend on the nature of the work. On heavy masonry work such as dams and lock walls, it will be necessary to know the C.F.C. of concrete poured or masonry executed or the square feet of forms placed.

5.30.2. The following units are suggested for reporting work performed daily on several accounts :

<i>Account</i>	<i>Approximate Unit of Measure</i>
1. Mechanical Excavation.	Number of loads (Cubic Yds.).
2. Hand Excavation.	Lin. ft. of trench, No. of footing.
3. Hauling aggregate and Steel.	{ Number of loads. Number of sacks.
Hauling cement.	
4. Formwork—Footings	Number completed.
Columns.	Lin. feet of wall or No. of panels.
Walls.	Lin. feet of wall or No. of panels.
Beams and Girders.	No. completed or Lin. ft. or bays.
Slabs Sills.	{ No. of bays. No. of windows.
5. Concreting.	
	No. of sacks of cement for each class of concrete, or by No. of batches produced.
6. Exterior curation—walls.	No. of bays.
7. Bearing walls and partitions.	No. of tiles or bricks or Lin. ft. × height or number of sacks of lime or cement.
8. Plastering.	{ No. of sacks of plaster. No. of rooms.
9. Carpentry—Posts, joists, rafters, etc.	
	No. of pieces.
10. Flooring and roofing.	No. of days or sq. ft. of area.
11. Structural steel.	No. of days or sq. ft. of area.

5.31. Accuracy Required

5.31.1. The time of man on construction work cannot be distributed with the same accuracy as for a workman at a bench or machine all day, probably working on only one operation. It is not difficult however for foreman to keep distribution of each man's time to the nearest quarter or half hour, and this is the greatest accuracy necessary. Even to the nearest hour is generally sufficient, as in the end inaccuracies will balance each other.

5.32. Monthly Reconciliation

5.32.1. Monthly reconciliation of figures of work and expenditure between Costing and Accounting Sections is most essential. The daily measurement of works on the basis outlined in para 5.28.1. gives only the approximate results, which are good enough for executing daily check of the performance of the equipment and operations. For working out the unit rates, however, all measurements of works have to be taken account of on a specified day towards the end of the month, and furnished simultaneously to the Costing and Accounting Sections. To bring about reconciliation, list of figures for expenditure in two sections, those relating to the accounting side are brought up-to-date by taking into consideration the unliquidation liabilities adjustments awaiting acceptance. This reconciliation should also cover stock accounts and workshop accounts.

5.33. Weekly Equipment Use Report

5.33.1. On large projects using a big fleet of machines, the Project Manager should be kept posted as regards the machines working, lying idle or under repairs. A weekly chart showing these details is given in Annexure 14.

5.34. Cost Schedule

5.34.1. Costing is the review of Estimating given in para 5.5. Typical charts and graphs for mass concrete mixed, plant, formwork and total executive force are shown in Annexures 11, 12 and 13. Such charts should enable the Project Manager to lay his fingers exactly on the pulse and take a timely action.

5.35. Progress Reports

5.35.1. Monthly progress reports are necessary to the Project Manager and for informing the State and Central authorities of the actual progress of work, the actual cost, the head of cost and the anticipated excess or saving against the estimated figures. It should be the responsibility of the Costing Sections to furnish such reports punctually on the forms shown in Annexures 16 and 17 and graphically in Annexure 18.

5.35.2. Form in Annexure 16 gives the figures by quantities and items of work.

5.35.3. Form in Annexure 17 gives the figures by expenditure on each item of work.

5.36. Monthly Variation Statement

5.36.1. The Monthly Progress Report mentioned above should enable the Project Manager to judge whether the quantities of various items of work and their rates of cost are behaving, whether any or both of these show a tendency to run away from the estimated figures and what is likely to be their aspect on the ultimate cost of the work. The Project Manager should submit half yearly a review on the effects of variations on the ultimate cost of the project with a view to enabling the higher authorities to decide whether administrative approval is necessary.

5.36.2. A sample form for such forecast is given in Annexure 18.

ANNEXURE 1

(5.2.1.)

Principal Units of Measurements

Sl. No.	Item	Unit
1.	Jungle Clearance	Acre
2.	Excavation	C.F.C.
3.	Back fill	C.F.C.
4.	Drilling and grouting holes	F.R.
5.	Boulder or quarried stone	C.F.C.
6.	Aggregate for concrete	C.F.C.
7.	Dressing of stone surface	C.F.S.
8.	Sand	C.F.C.
9.	Lime	Maund
10.	Surkhi (ordinary or fine)	C.F.C.
11.	Cement	Cwt.
12.	Steel	Cwt.
13.	P.C.C. or Lime Concrete	C.F.C.
14.	Masonry (Brick) except walls—one brick or less	C.F.C.
15.	Masonry (Stone)	C.F.C.
16.	Masonry in walls—one brick or less	C.F.C.
17.	Glass	F.S.
18.	Plastering	C.F.S.
19.	Pointing	C.F.S.
20.	Timber Boarding	F.S.
21.	Timber Scantling	F.C.
22.	Doors and Windows Shutters	F.S.
23.	Doors and Windows Frames	F.C.
24.	Formwork	C.F.S.
25.	Water Stops (Copper Strips, etc.)	F.R.
26.	Pipes	F.R.
27.	Paints, stiff or ready mix	Lbs.
28.	Varnishes and Oils	Gallons
29.	P.O.L. Group	Gallons
30.	Gates	Tons
31.	Pitching work	C.F.C.
32.	Explosives	Lbs.
33.	Water	M.G.

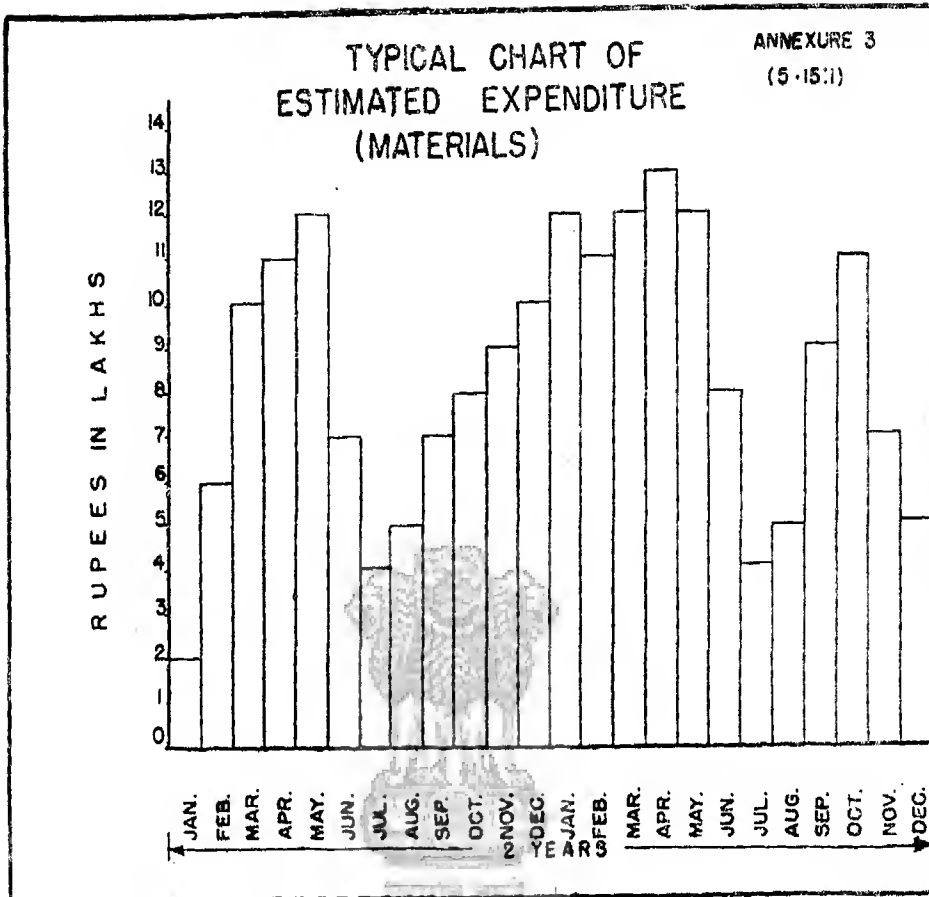
ANNEXURE 2

(5.12.3)

Project Manager or Chief Engineer

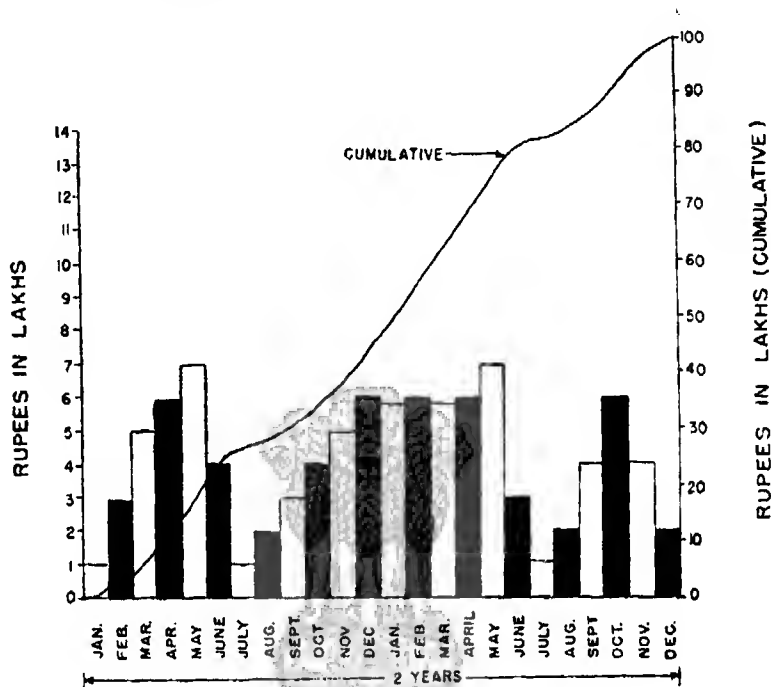
Deputy Project Manager or Superintending Engineer

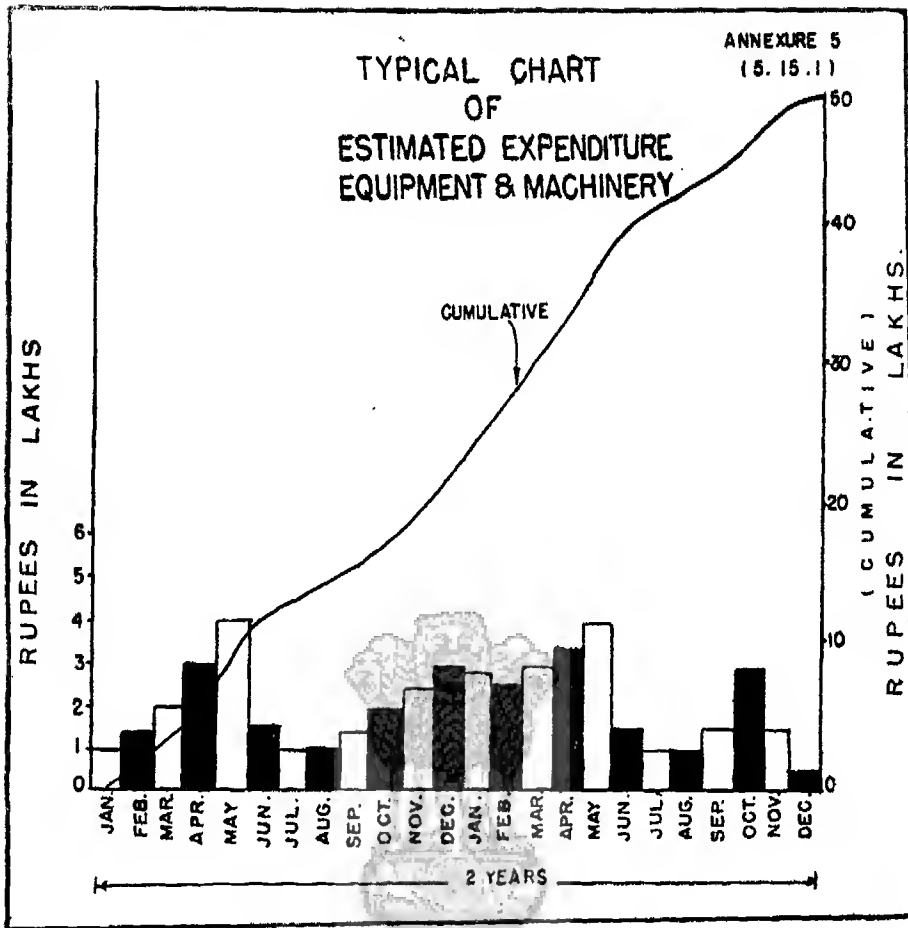
Civil Engineering Department	Mechanical Engineers	Electrical Engineers	Chief Stores Officer	Personnel	Cost Engineer	Field	Accounts Chief
1. Dams & Canals. 2. Field Construction.	1. Workshop. 2. Plant. 3. Water Supply. 4. Transport.	1. Lighting. 2. Power Generation. 3. Power Utilisation.	1. General Stores. 2. Mech. Stores. 3. Electrical Stores. 4. Dead Stores. 5. Procurement Section.	1. Establishment 2. Recruitment of Labour. 3. General amenities. 4. Accommodation. 5. Acquisition. 6. Public Relations.	1. Contracts. 2. Rates. 3. Costing & Budgeting. 4. Progress Report. 5. Deviations. 6. Claims.	1. Design & Specifications. 2. Inspection & Control. 3. Measurements of work.	1. Accounts & Stores Inventory. 2. Time-keeping.



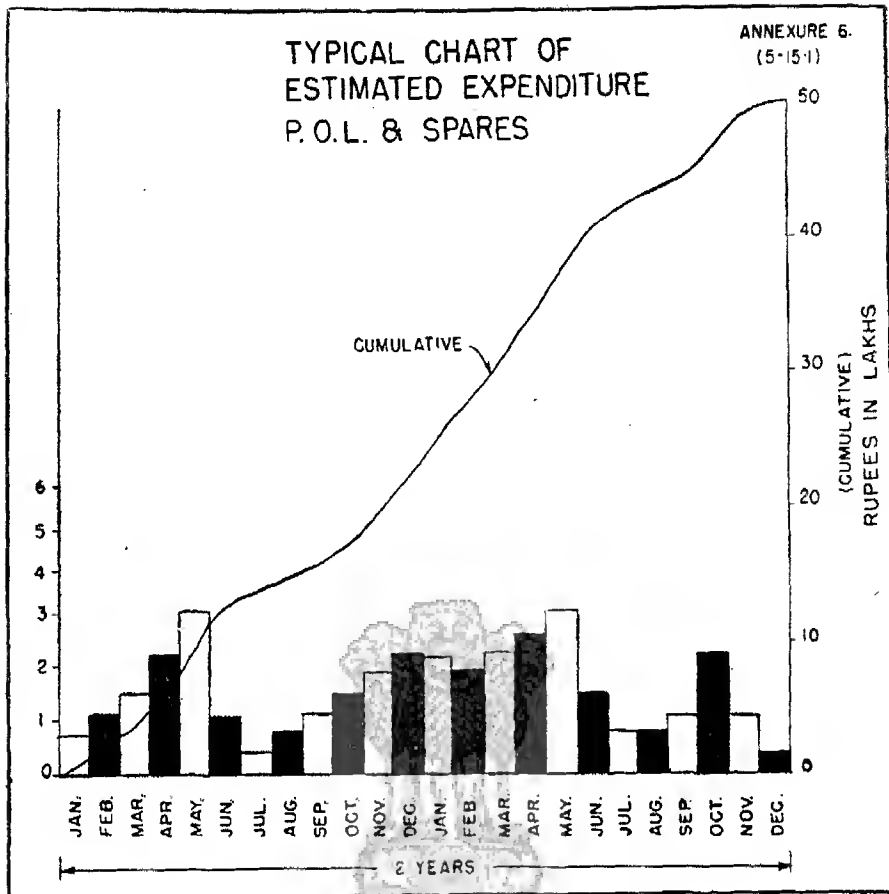
TYPICAL CHART
OF
ESTIMATED EXPENDITURE LABOUR

ANNEXURE 4
(5-15-1)

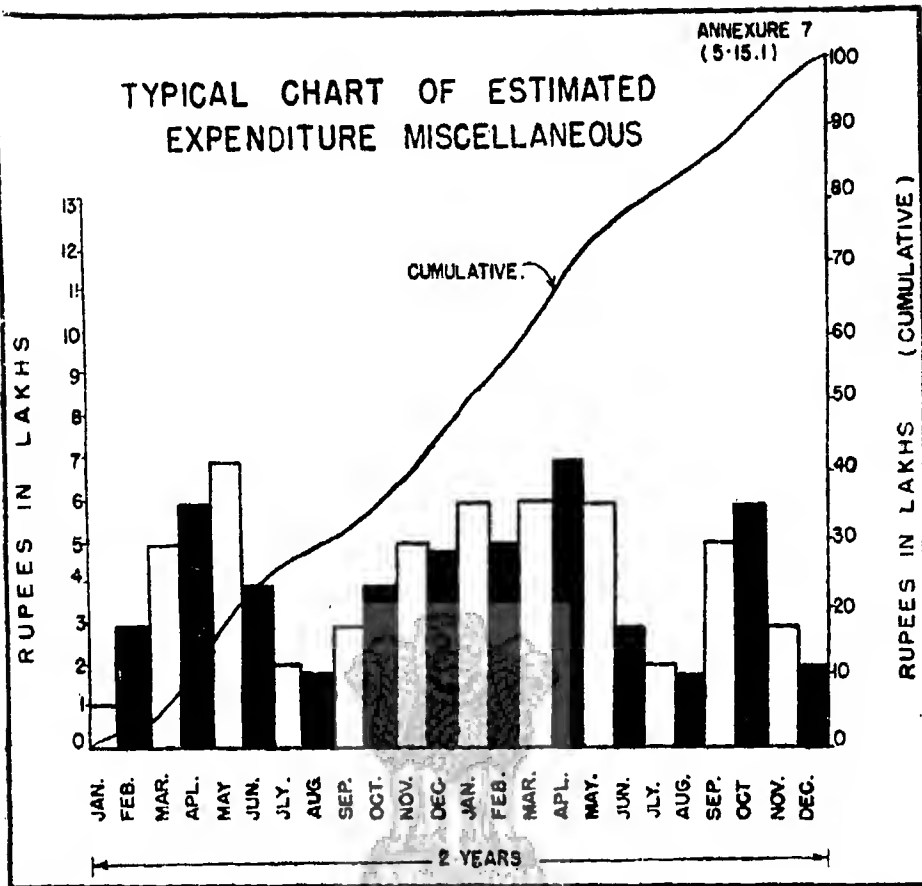




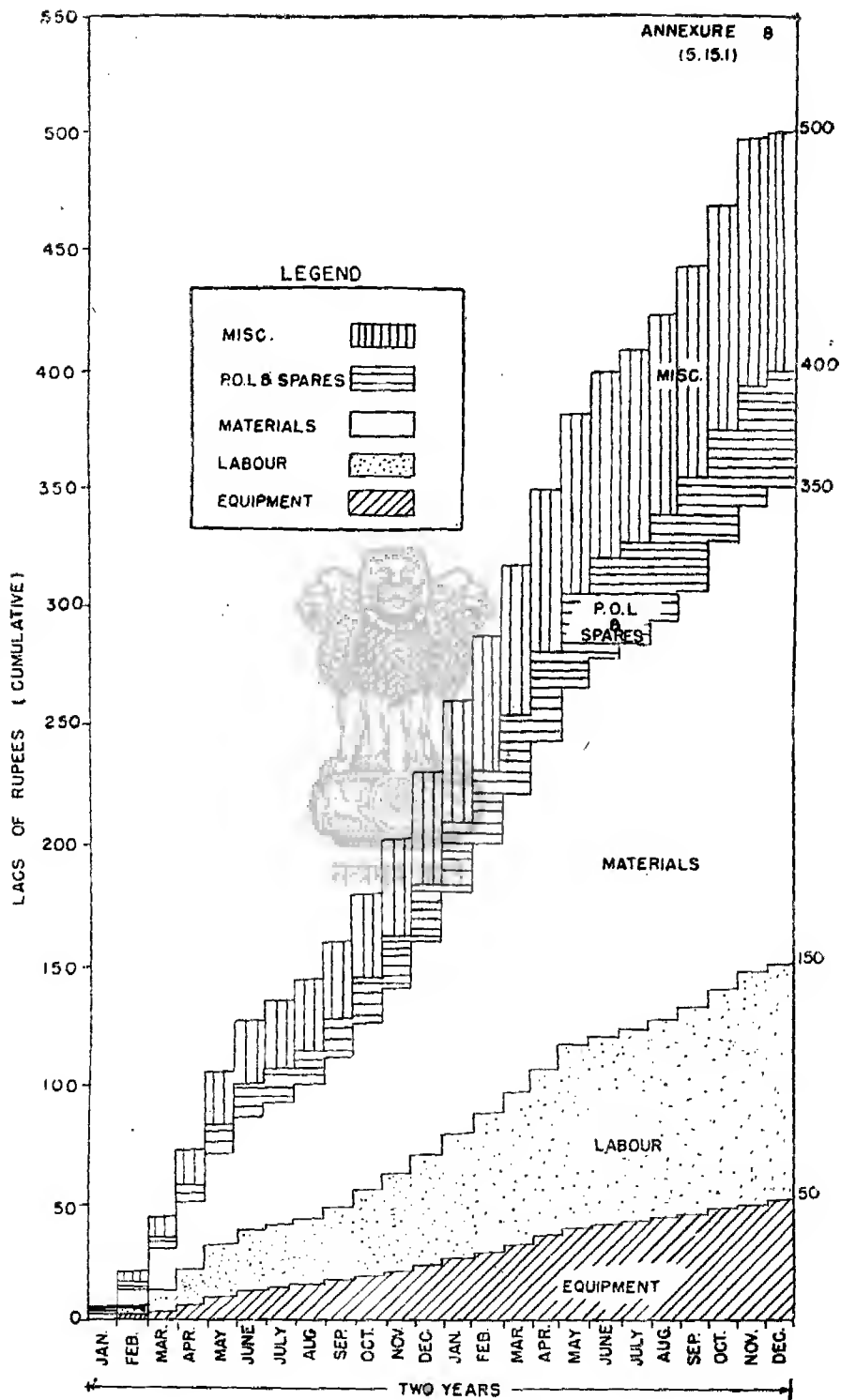
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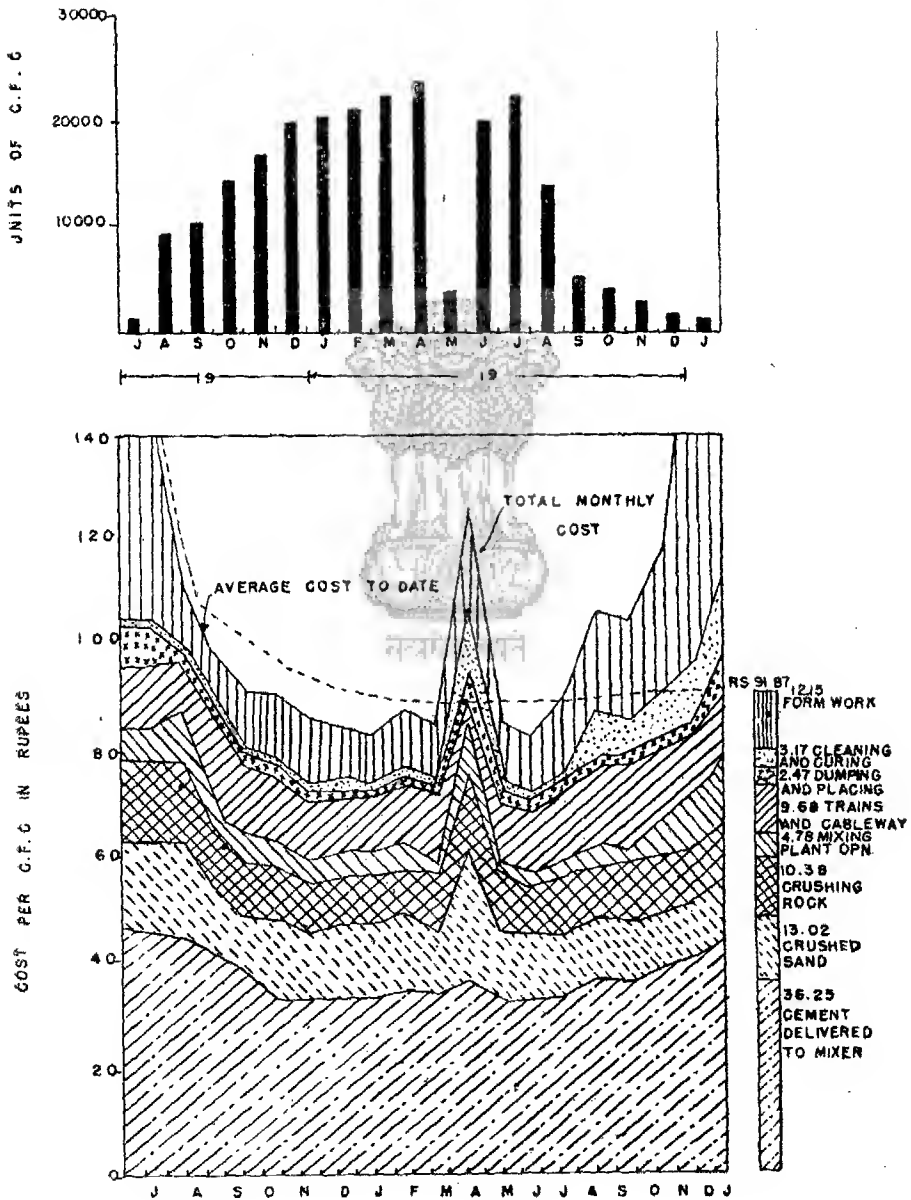
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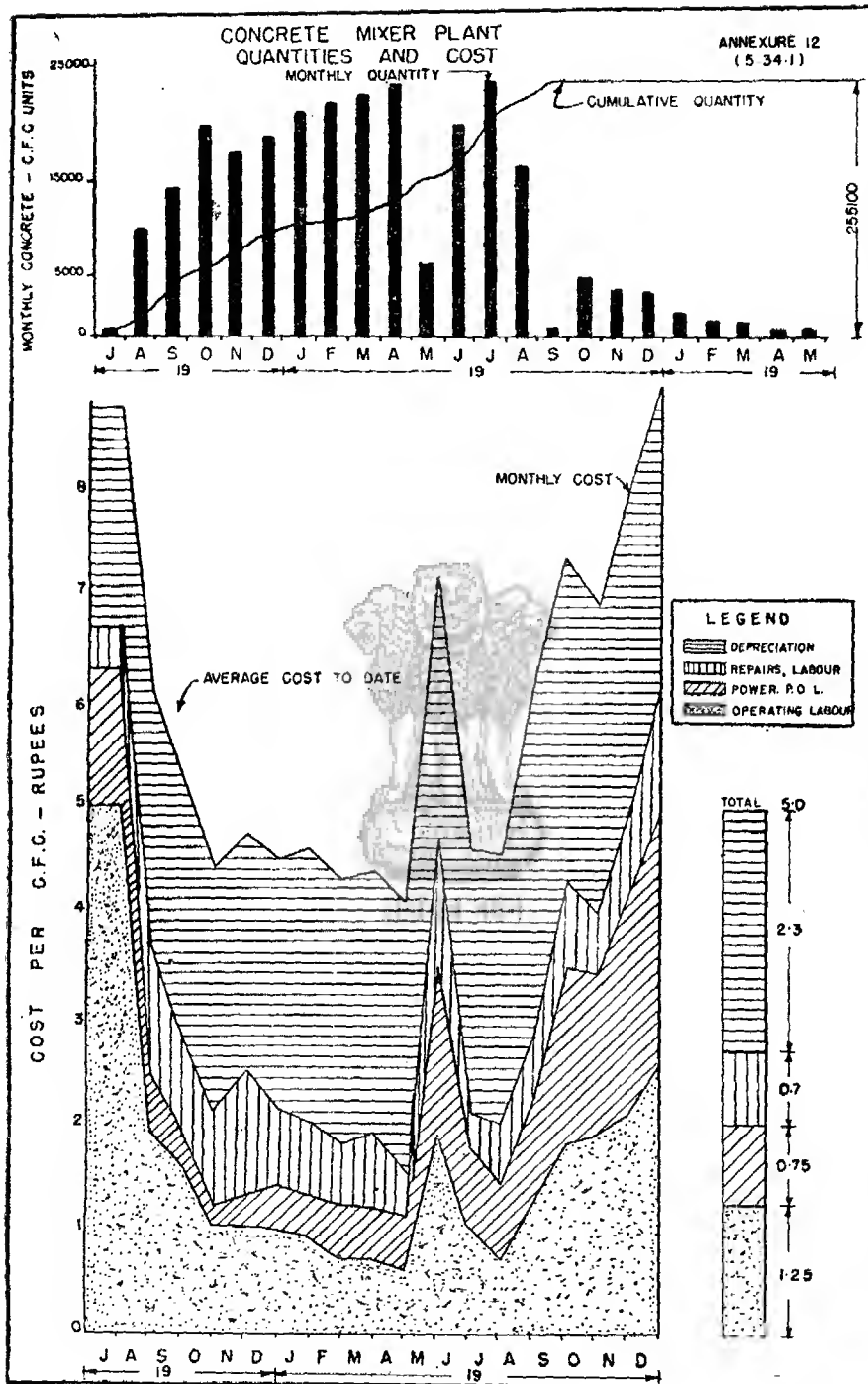


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ANNEXURE II

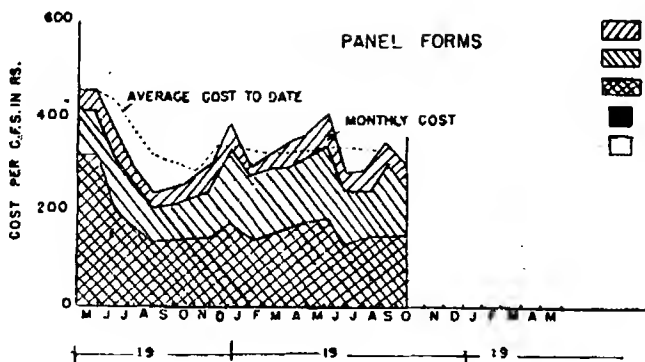
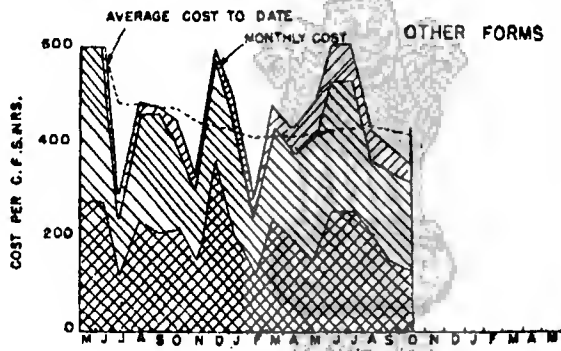
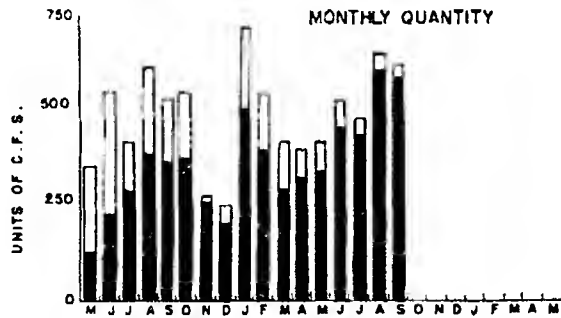
(5-34.1)

MASS CONCRETE
MONTHLY QUANTITIES COSTS



UNIT COST OF ALL FORMWORK
MASS CONCRETE

ANNEXURE 13
(5-34-1)



- LEGEND
- EQUIPMENT AND MISC. EXPENSE
 - MATERIALS AND SHOP WORK
 - FIELD LABOUR
 - PANEL FORMS
 - OTHER FORMS.

ANNEXURE 14.
(5.33.1)

EQUIPMENT USE REPORT

EQUIP.	DAY SHIFT	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY		SUNDAY	
		I	II	I	II	I	II	I	II	I	II	I	II	I	II
TRUCK	1	Working		Working		Stand By	Stand By	Working	Stand By	Working	Working	Working	Stand By	Working	Working
"	2	Working		Working											
"	3	Working	Working	Working	Working	Working	Working	Working	Working	Working		Working		Working	Working
"	4	Working		Working		Working	Working	Working	Working	Working		Working	Working	Working	Working
"	5	Working		Working		Working		Working		Working		Working		Working	Working
"	6	Working	Working	Working	Working	Working	Working	Working	Working	Working	Working	Working	Working	Working	Working
TRACTOR	1	Working		Working		Working	Working	Working		Working		Working		Working	Working
"	2	Working													Working
"	3	Working												Stand By	Stand By
"	4	Working	Working												Working
"	5	Working													
"	6	Working													
"	7	Working	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Stand By	Working	Working
"	8	Stand By										Stand By	Stand By		Working
SHOVEL	1	Working						Working				Working			Working
"	2	Working	Stand By	Stand By				Working				Working			Working
"	3	Working						Working				Working			Working

WORKING

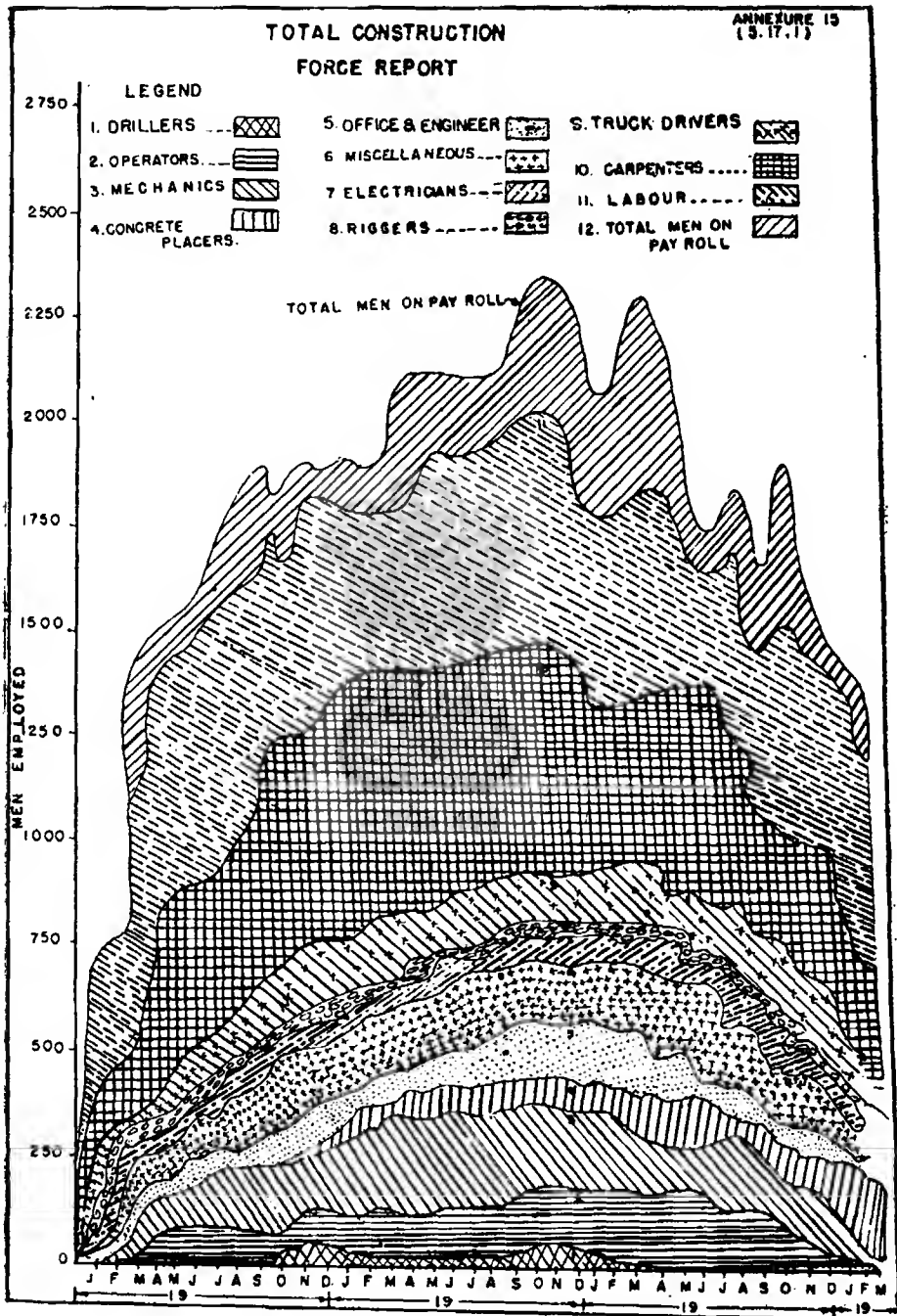


STAND BY



UNDER-REPAIR







ANNEXURE 16
(5.35.2)

Monthly Progress Report
(Quantities of Work)

Sl. No.	Item	Estimated Amount	Progress to end of pre-vious month	Progress during the month	Total progress up-to-date	Percentage (Col. 6/3)	Scheduled progress	Percentage (Col. 6/8)	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

ANNEXURE 17

(5.35.3)

Monthly Progress Report
(Expenditure)

Sl. No.	Item	Estimated Amount	Weighted percentage of actual	Expenditure to end of previous month	Expenditure during the month	Expenditure up-to-date	Percentage (Col. 6/3)	Scheduled expenditure	Weighted percentage age (Col. 6/8)	Weighted percentage age of completion	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

ANNEXURE 18

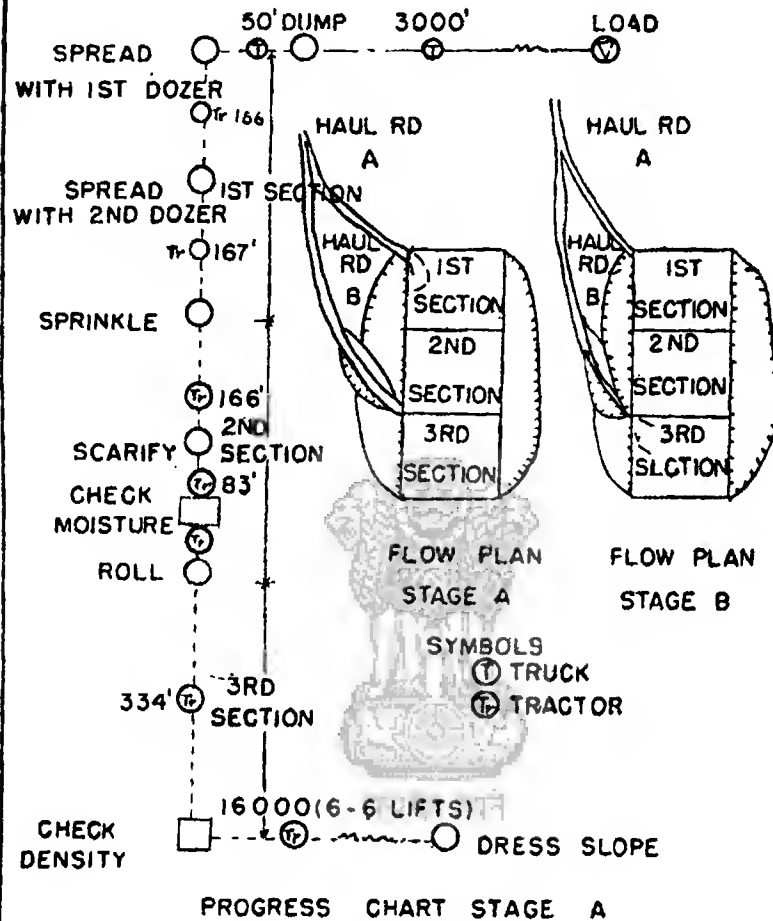
(5.36.2)

Monthly Forecast of Variations

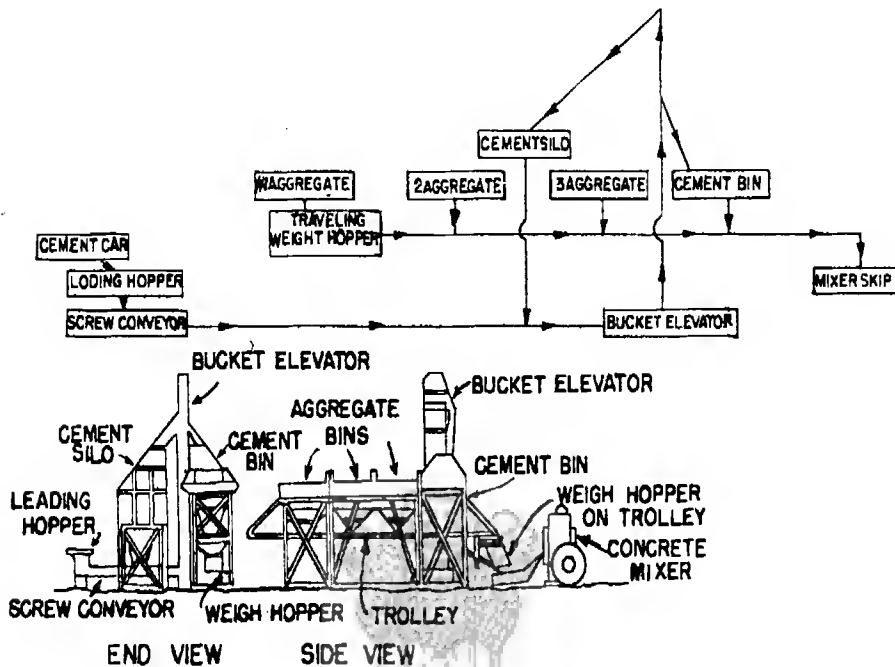
Sl. No.	Item	Estimates			Actual to end of previous month			Actual during the month			Adjustment		REMARKS
		Qty.	Rate	Cost	Qty.	Rate	Cost	Qty.	Rate	Cost	+	-	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
Sl. No.	Item	Actual up-to-date			Remain- ing Qty.	Estimated cost to completion			Variation			REMARKS	
		Qty.	Rate	Cost		Qty.	Rate	Cost	+	-			
(1)	(2)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)		

ANNEXURE 19 (1)

(PARA 5.14.1)



FLOW DIAGRAM AND PROCESS FOR ROLLED EARTH FILL.



FLOW DIAGRAM FOR BULK CEMENT MIXING PLANT

CHAPTER 6

FORMS

6.1. Revision of Forms for Financial Accounts and Stores

6.1.1. Revision of the existing accounts rules has been necessitated by the large maintenance and the rapid advance towards mechanisation of the methods of construction of civil engineering works. Consequently some of the old forms have been proved unsuitable for large mechanised works while some new ones have become necessary.

6.1.2. Central Public Works Accounts forms Nos. 1 to 6, 13 to 19, 23 to 28, 31, 32, 39, 42 to 46, 48 to 86, 88 to 98 can be retained intact.

6.1.3. The Central Public Works Accounts forms Nos. 7 to 12, 21, 22, 29, 35 to 38, are recommended to be deleted.

6.1.4. Central Public Works Accounts forms Nos. 33, 34, 40, 41 are proposed to be amended.

6.1.5. The new forms belong to the series N-1, N-2, N-3 to N-39 as detailed in Appendix IV.

6.1.6. A comparative statement of forms proposed is given in Appendix IV.

6.2. The forms recommended for deletion are dealt with below.

6.2.1. *Form 7—Indent for Stores*

The old form is required to be prepared in triplicate and is so made up that the carbon process cannot be applied. It takes time to fill up and often results in copying mistakes. Columns for unit rates and amounts are wanting.

It is recommended to replace this form by form No. N-13 which is to be prepared in triplicate in indelible or copying pencil or in as many copies as necessary by the carbon process. To avoid mistakes in identification of stores, code numbers have been proposed.

6.2.2. *Form No. 8—Register of Stores Receipt and Issues*

This register is prescribed in para 115 of Central Public Works Accounts Code and has proved inadequate for want of columns for Units, Weight, Delivery Note, Balance Code Number, Issue rate, maximum, minimum ordering stock levels and signatures of the Issuing Officer. It was a sort of a day book kept as a memoranda of the daily receipts and issues without complete details of each transaction and does not meet the present day requirements when daily transactions run into thousands.

New form N-10 is, therefore, proposed in its place.

6.2.3. *Form No. 9—Abstract of Stock Receipts*

The form is designed to accommodate only a limited number of items and has, therefore, lost its utility with the abnormal increase in the number of items of stores. It contains record of both quantity and value. Columns are so small that both these cannot be entered clearly. This has been replaced by form No. N-11 of "Monthly Abstract of Stores Received"

described elsewhere. Columns for Stores Receipt and Code numbers have also been provided.

6.2.4. *Form No. 10—Abstract of Stores Issued*

Same as in the case of form 9 with the exception that it is an abstract of issues. It has been replaced by form N-16 and is similar in design to form N-11.

6.2.5. *Form No. 11 for Half Yearly Return of Stock and Form No. 12 for Half Yearly Register of Stock*

This return and register used to be prepared half yearly in September and March and entailed considerable labour, and the work invariably fell into arrears. Also essential columns viz., Code Nos. for the identification of Stores, references to suppliers bills, and receipts of Stores, results of checks, maximum and minimum level prescribed for the guidance of the stores offices etc., etc., were wanting. The new forms N-10 and N-18 together would overcome these short comings and save labour.

6.2.6. The muster roll (C.P.W.A. Form No. 21) serves the purpose of:—

- (1) identification of a labourer.
- (2) defining his category and wage rate,
- (3) giving his attendance,
- (4) showing date and amount of disbursements,
- (5) giving details of unpaid wages,
- (6) showing quantity of work done,
- (7) showing attendance checked by inspecting officers.

The system has proved useful on small works, but unsatisfactory where the muster runs into thousands. The reasons are:—

- (1) The mustering and calling names and marking attendance of a large number of men takes considerable portion of the working time.
- (2) Checking of labour during the shift also takes a good part of time.
- (3) The identification of a very large number of labourers is difficult both at the time of attendance and payment.
- (4) The form does not provide for piecemeal payments to labourers, who are often unable to muster for acquittance enmass.
- (5) The place of employment, time keeping and disbursements are centred in a single individual and it often leads to the above difficulties. The result is that more often than not muster rolls are marked at one sitting in the office from notes kept on scraps of paper and the sanctity of its being the original record is no longer achieved.

We, therefore, recommend that a Time Keeping system described in Appendix V be introduced on all large River Valley Projects to do away with the evils and drawbacks of the muster roll system.

6.2.7. *Form No. 23—Measurement Book*

The old form contained columns for particulars, length, breadth, depth, and contents of area and was evidently designed to record the quantities of work executed by the Public Works. It did not at all meet the requirements of records to be maintained for the supplies of orders, which should provide columns for the stores code number, units, quantities received and accepted, etc., etc. The new form N-8 has been specifically designed to

meet these requirements and is already in use on some important projects viz., Tungabhadra (Andhra) in India. The existing Measurement Book Form (C.P.W.A. Form 23) shall continue to be used for works.

6.2.8. Form No. 29—Pay Bill of Workcharged Establishment

The existing form does not provide columns for identification or Badge Number, hours of daily attendance, shift number which are so necessary for avoiding mistakes in payment. The proposed form N-23 overcomes these drawbacks.

6.2.9. Forms 33, 34—Works Abstracts

Columns by sub-heads and items of works are rarely filled in these forms and have been proposed to be omitted from the new form N-34. The purpose served by these columns would be fulfilled by the information kept in the Costing Section.

6.2.10. Forms 35, 36, 37 and 38

These forms relate to the maintenance of value and quantity accounts of all stores charged to a work. The Committee noticed that these accounts could not be kept up-to-date on account of innumerable transactions involved. It is proposed to replace these forms and the entire materials issued to works may be accounted for through stock. However, in order to keep a watch over materials issued it is proposed that quantity accounts of receipt and issues may be maintained in a *maukawar* register (Site Account Register Form N-36) and physical check carried out occasionally. The verification of actual consumption as against the estimate will be watched by Costing Section.

6.2.11. Register of Works (Form Nos. 40 and 41)

With the introduction of costing cells on all River Valley Projects, the maintenance of this form in details is not necessary as its real functions will be reflected by other statements of Cost Account Section. A simplified form No. N-35 has been recommended in its place. A column for unpaid wages has been provided for facilitating costing.

6.3. Proposals for New Forms

6.3.1. Purchase Requisition (Form N-1)

This is a new form and has been introduced in order to keep a watch on the regular and timely flow of the required stores. This requisition is required to be submitted in duplicate by field engineers to the construction engineer of the project. A close liaison between the store and the field officers initiating the indents is necessary.

6.3.2. Enquiry Form (Form N-2)

Enquiries are made at present on typed letters, and many of the important items of information are omitted, resulting in waste of time in subsequent correspondence. The object of the new form N-2 is to standardise the inquiries.

6.3.3. Purchase Orders for Stores (Form N-3)

After quotations received as a result of enquiries issued have been decided upon, orders for supply of the stores will be issued on this form. It is an elaborate form and contains all the terms and conditions of supplies etc. This is to be prepared in 6 copies intended for :—

1. Firm.
2. Officer Receiving Stores.

3. Officers holding the stores.
4. Ultimate user.
5. Accounts Branch.
6. Office Copy.

6.3.4. *Register of Purchase Order (Form N-4)*

The maintenance of this register has been recommended in order to have a consolidate record for facility or reference and watching receipts. This has to be maintained by Procurement Officer and the officer receiving the stores.

6.3.5. *Register of Railway Receipts (Form N-5)*

The importance attached to Railway Receipts and the care with which these are required to be handled have necessitated the maintenance of their record to watch their movement and final disposal of stores received.

6.3.6. *Rejection Memo (Form N-6)*

The form has been introduced to ensure prompt action towards disposal of the rejected stores.

6.3.7. *Rejection Register (Form N-7)*

This form is necessary to have a consolidated record of rejections for future reference.

6.3.8. *Store Received Book (Form N-8)*

This form should be machine numbered, also have pages machine numbered and has been recommended to replace Measurement Book (Form No. 23) so far as entries of supplies are concerned. The use of Measurement Book has not been found suitable for recording the receipt of stores and payment thereof, as the procedure of passing the books and bills to various tables causes delay in payment and in completion of the connected record. This form will be written in copying pencil or indelible ink in triplicate by carbon process. The copies should also bear invariably the signature of the store-keeper and the signature and designation of the officer entering measurements.

One copy is retained by officer receiving the stores, the second is passed on to the disbursing officer with necessary certificate of verification for making payment and posting ledgers etc., and the third copy is utilised to prepare the abstract of stores received. At the bottom of the form are noted charges on account of freight, handling, insurance, transport, sales tax, octroi, etc., and a percentage of the total price of stores received worked out to know the approximately correct price. Stores Received Books should receive attention and care as is given to Measurement Books. Some instructions for their use are recounted below:—

1. Entries should be invariably made in copying or other indelible pencil with carbon papers to take out more copies. The carbon copies should also contain invariably the signature of the store-keeper and the signature and the designation of the officer entering measurements.
2. Entries should be recorded continuously and no blank page or pages left or torn out. Any page left blank should be cancelled by diagonal lines, the cancellation being attested with date. None of the lines should be left blank. Any line not required should be carefully scored through in order to prevent additional entries being made later.

3. No entries should be erased. If a mistake is made it should be corrected by crossing out neatly the incorrect word or figure and rewriting the correct word or figure and the entries made should be attested with dated initials by the subordinate concerned.
4. Detailed account of measurement of stores should be kept in Stores Received Book.
5. Reference to the Purchase Order No. and Date and Supplier's name should be given in respect of materials received from suppliers. In case of returned stores return Note No. and Date and name of the returning office should be noted.
6. The quantity of the materials received should be in the same unit as that adopted in the Purchase Order. A certificate in the following form should be given by the subordinate receiving the materials under his dated signatures :—

(i) On the Stores Received Book.

Certified that the articles have been measured by me and are of approved quality.

(ii) On the Bill.

Verified by me _____ vide S.R.B.
No. _____ dated _____.

6.3.9. Register of Bin Cards (Form N-9)

This register has been proposed at Form No. N-9 and is intended to serve as a permanent record of the issue of bin cards and will be useful to watch against spurious or duplicate issues.

6.3.10. Bin Card (Form N-10)

This form has been introduced to replace the old and inadequate forms Nos. C.P.W.A. 8 and 11. This form contains all the relevant information necessary and should be kept for each item of stores.

6.3.11. Abstract of Stores Received (Form N-11)

At present the abstract of stores receipt (C.P.W.A. 9) is proposed for entire sub-division abstracted from the entries in register of stock receipt issue (Form C.P.W.A. 8), showing total receipt of an individual item from each source. This form 9 was suitable for small stores holding a few items only but have been found inadequate for recording a large number of transactions common at River Valley Projects. The size of columns devoted to each item is also found insufficient. This form is required to be prepared within a few days intervening the date of closing and submitting the monthly account by sub-division. As the number of transaction each month on River Valley Projects is so large that it is practically impossible to prepare it in duplicate which has to be done by manual labour as the layout is not convenient for typing.

The receipt of stock on Stores Received Book form are already classified by sub-heads of stock, the duplication in preparation of this form is considered unnecessary and it is adequate to prepare an abstract of Stores Received Books sub-divided by stock sub-heads to serve the purpose of existing forms. Sorting of transactions by Purchases and Cash would not seem necessary in view of the Committee's recommendation that all stores should be passed through 'purchases'.

This new form can be filled up daily from the copy of the Store Received Book which would form its accompaniment.

6.3.12. *Bill Register (Form N-12)*

Bills for supplies should be dealt with the same care as prescribed for the bills for works in the Central Public Works Accounts Code. In almost every office a register is maintained in a manuscript form and in order to standardize it for uniformity of procedure this form has been proposed for maintenance by the disbursing officers to watch the disposal of bills.

6.3.13. *Indent for Stores (Form N-13)*

As already shown above this form has been revised to suit the local requirements on River Valley Projects or other large stores.

6.3.14. *Stores Issue Book (Form N-14)*

The existing Public Works Account form No. 10 (Abstract of Stock Issues) is not suited to the present day conditions for reasons already given under Stores Received Book Form N-8. It is proposed to replace it by Stores Issue Book grouped by sub-heads of stock and each group classified by works and its sub-heads.

The detailed procedure for the preparation of the Abstract of Issues will be as under :—

- (i) Each sectional store holder will prepare separate Stores Issue Books for different sub-heads of stores daily for the issues of the day based on the registered number of the indents. The total value for a stock sub-head should be carried forward from page to page for on account month.
- (ii) The sectional store holder should prepare in addition an abstract of the indents in a sheet maintained separately for each work and its sub-heads of stock *vide* form N-15 in Appendix IV. He should post this form daily from Stores Issue Books and prepare an abstract thereof at the close of the month in a monthly abstract Form N-16 given in Appendix IV to which one copy of the Stores Issue Book, concerned will form its accompaniment.
- (iii) At the end of a month, each sectional store holder will submit a set of Stores Issue Book and a copy of the Monthly Abstract of Issue Indents to the officer who compiles the account of the store. The officer will, in turn, consolidate the abstract of various sectional store holders in similar monthly abstract form for his entire charge which will give the value of the store issued by store sub-head, by work and its sub-heads, and by the Fundamental Heads of Account. This will form the basis of intimating the debit to various sub-divisions and divisions work-wise give the necessary figures for periodical reconciliation of the stock sub-head are concerned.
- (iv) The main advantage of this system is that the classification of the indents by works, their sub-heads and the sub-heads of stock is carried out from day to day so that the work remains up-to-date.

6.3.15. *Abstract of Issue Indents (Form N-15)*

This form has been suggested to be prepared by store holder concerned for each work and its sub-heads for preparation of Abstract of Issue. The main advantage of this is that the classification of indents by works, their sub-heads and the sub-heads of stock is carried out from day to day so that the work remains up-to-date.

6.3.16. *Abstract of Stores Issued (Form N-16)*

Similar to that of abstract of stores received, this form will contain the abstract of stores issued by sub-heads of stock and is intended to replace the old C.P.W.A. Form 10.

6.3.17. *Stores Return Note (Form N-17)*

This form has been introduced to support the return of stores previously issued to work to form a basis of entry in the relevant records. This form may be in red colour to distinguish it from the other forms.

6.3.18. *Store Price Ledger (Form N-18)*

The stock form C.P.W.A. 12 gives the quantity and value account for each transaction and balance. This form is proposed to be replaced by stores stock ledger form envisaged in para 133 of C.P.W.A. Code to watch the value account of the transactions. This ledger will be posted independently of the bin cards from the Stores Received Book and Stores Issue Book and will, therefore, form a fundamental basis for the reconciliation of the receipts, issue and balance of stock by sub-heads.

6.3.19. *Daily Stock Verification Report (Form N-19)*

The rules of C.P.W.A. Code lay down that physical verifications should be performed by such agency according to the procedure decided by local administration in consultation with Accountant General and consequently different types of procedures exist in practice.

As this is an important function, it is considered desirable to have an officer of adequate status set apart for this job; status of officer depending on the size and value of the stores.

Results of verification by stock verifier are proposed to be reported in this form.

6.3.20. *Register of Programme of Physical Verification (Form N-20)*

He is also recommended to maintain a register in the following form to control the programme of physical verification.

Stores	Code No. of Store article	Date of Stock				Remarks
		1st Cycle	2nd Cycle	3rd Cycle	4th Cycle	
1	2	3	4	5	6	7

6.3.21. *Time Card (Form N-21)*

This form is intended to serve as a means of time reporting and cost distribution. This will dispense with maintenance of muster rolls for labour. It helps the Foreman/Overseer to have an accurate knowledge of labour costs tending to promote high efficiency and productivity.

6.3.22. *Time Check Sheet (Form N-22)*

This form is recommended to be maintained by a person (Time-Keeper) other than the Foreman/Overseer and serves as a means of check of time cards and it gives at a glance the result of check of labour by Time-Keeper.

6.3.23. *Pay Roll (Form N-23)*

This form has been recommended for payment. A few pages of each ledger at the end shall be reserved to abstract the transactions of each of

the articles in that ledger every month. For periodical reconciliations with Financial Accounts a copy of this abstract should be given to the accounts branch where the total of all the ledger abstracts grouped by sub-heads can be taken. It has been found that the work of stock closing is generally in arrears due to tremendous amount of work attending to it due to half yearly closing and copying out the old registers for the next half year. This form has, therefore, been proposed for general adoption to meet the demand on large River Valley Projects.

The following rules should be observed in the maintenance of Store Price Ledger:—

1. One page or more of the ledger should be devoted to one item, as necessary.
2. One ledger should be devoted to one stock sub-head or category.
3. Entries in the ledger for the receipts and issues should be initialled by the officer entrusted with the posting.
4. A certificate should be given on every Sales Issue Book and Sales Receipt Book to the effect that entries are made in the ledger accordingly.
5. Ledger folios shall normally be arranged according to the sequence of the store code numbers.
6. The face sheet should be given an index of the items in the ledger and their code number and page.
7. Arrangements should be made by the Divisional Officer to see that a given percentage (normally not less than 50%) of the entries on the receipts and issues of the ledger are checked with the Stores Received Books and indents by a responsible officer of the divisional staff say, Divisional Accountant, Store-Keeper, etc.
8. Ledger should be kept in safe custody under lock and key.
9. Ledgers may be in bound registers, each page being machine numbered. Alternatively they may be in loose leaf (like the kalamazoo binders) in which case each sheet shall bear the initials of the Divisional or Sub-Divisional Officers at the time of issue of wages of labourers and other members of staff.

6.3.24. *Tools Card (Form N-24)*

This form is intended to watch the movement of tools lent out temporarily for use.

6.3.25. *Equipment Ledger (Form N-25)*

This form is proposed to be kept for each machine in the Divisional Office to indicate its history i.e. type, plant and machinery number, size, capacity, cost, source of supply, date of purchase, estimated life, rate and amount of depreciation, overhauls and residual value, etc. This will ensure ownership cost, record of all equipment.

6.3.26. *Distribution or Equipment Time Sheet (Form N-26)*

This form is used to summarise the hours a machine has worked on each job and to distribute the cost.

6.3.27. *Daily Issue of Materials and Stores for Operation (Form N-27)*

This form is intended for the Foreman/Overseer to report to Cost Section daily issue of stores to each machine in his charge, on the field and should be sent to Cost Section.

6.3.28. *Daily Report of Automobiles (Form N-28)*

This report contains a record of use of automobiles.

6.3.29. *Daily Output Report—Machines (Form N-29)*

This form gives the daily output given by a machine.

6.3.30. *Daily Output Report—Manual Labour (Form N-30)*

This form is intended to report daily output by categories of labour employed.

6.3.31. *Monthly Production Report—Machines (Form N-31)*

This form is intended to give monthly output of machines.

6.3.32. *Cost Report—Mass Concrete (Form N-32)*

The report of Mass Concrete will be submitted on this form.

6.3.33. *Estimate (Form N-33)*

This form has been recommended for use for sanction of estimates containing separately quantity estimate and cost estimate. This forms the foundation of cost control and should be prepared with meticulous care and in detail to enable cost engineer to distribute costs on items of work.

6.3.34. *Works Abstract (Form N-34)*

The old form No. CPWA-33 has been replaced by this form which is a simplified one as detailed posting as required in the old form is not now considered necessary due to the recommendations for having a costing section on all large River Valley Projects.

6.3.35. *Register of Works—Major (Form N-35)*

This is also a simplified form and is recommended for adoption as stated in para 6.2.11.

6.3.36. *Sub-Stores Register for Sites of Work (Form N-36)*

This register has been prescribed for keeping account of stores by Sites Charged to works. A manuscript register for recording daily transactions of receipt/issue of Stores by sites should also be maintained to post the totals in Form No. N-36, monthly.

6.3.37. *Daily Report of Field Repairs (Form N-37)*

This form is intended to report daily the field repairs carried out to any machine during the day.

6.3.38. *Daily Report of Accident and Break-down (Form N-38)*

The report of accidents and break-down of a machine should be submitted daily on this form.

6.3.39. *Daily Mass Concrete Report (Form N-39)*

The report of mass concrete should be submitted on this form.

CHAPTER 7

SUMMARY OF RECOMMENDATIONS

Sl. No.	Recommendations	Reference to para
(1)	(2)	(3)
1.	That the existing Muster Roll system be replaced by Time-keeping system on large River Valley Projects	2.4.2
2.	That costing should be done in a separate Section	2.4.2
3.	That Stores accounts be kept on the lines detailed in Chapter 4 ..	2.4.3
4.	That inspection and issue of inspection notes and payment for supplies should be prompt	2.4.4
5.	That a system of payment for supplies on indemnity bonds be introduced	2.4.4
6.	That advance payments should be permissible in the case of local deliveries also	2.4.4
7.	That it should be permissible to raise debits for the supply of stores falling under Transfer between P.W. Office on the basis of issues from godowns supplemented by the receipts of the indenter or his Clearing Agent	2.4.5
8.	That it should be permissible to make payment for supplies made within the country against Running Rate Contracts made by Director General, Supply & Disposal direct to the supplier instead of through Director General, Supply & Disposal	2.4.6
9.	That it should be permissible to make payment of Freight to the Railways by cheque or in cash	2.4.7
10.	That it should be necessary to clear that Workshop Suspense either by cash recovery or by adjustment made periodically in case of completed jobs	2.4.8
11.	That an annual requirement of stores on a project should be budgeted carefully and a revenue limit laid down	2.4.9
12.	That disposal of surplus and unserviceable stores should be prompt ..	2.4.9
13.	That non-standard and obsolete equipment should not be purchased ..	2.4.9
14.	That proper discretion for purchase of spares should be exercised and a comprehensive list of interchangeable spares also prepared for use. ..	2.4.9
15.	That physical check of stores should be carried out continuously ..	2.4.9
16.	That the use of present form of register of works (CPWA form 40 & 41) and work abstract (CPWA form 33 & 34) may continue on smaller projects	2.4.10
17.	That simplified forms of work abstract (Form N-34) should be used on larger projects	2.4.10
18.	That the register of works in a simplified form (N-35) be used on larger projects	2.4.11

(1)	(2)	(3)
19.	That maintenance of material at side accounts be dispensed with and all stores passed through Stock accounts	2.4.14
20.	That only quantity account of stores received and issued on works for material at site be kept in a Maukawar register and physical verification carried out periodically.. .. .	2.4.14
21.	That classification and coding of stores items be done on a decimal system as described in Chapter 4	2.4.15
22.	That adequate and trained stores personnel be posted in Stores Section in advance	2.4.15
23.	That measurement books (CPWA form 23) so far as supplies are concerned should be replaced by a new form (N-8) of stores received book	2.4.15
24.	That standard issue rates should be fixed for each item of store for duration of the project	2.4.15
25.	That some of CPWA forms be amended and some replaced	2.4.15
26.	That proper stores yards and bins be constructed for keeping stores and watch and ward staff employed for security	2.4.15
27.	That a ledger for all equipment in form N-28 be maintained	2.4.16
28.	That figures of Cost Section & Financial Accounts Section should be agreed and differences reconciled	2.4.17
29.	That field report for labour, equipment material issued should be introduced	2.4.17
30.	That a system of designating physical quantities and details of accounts by unit be introduced to facilitate classification of expenditure	2.4.18
31.	That decimal system of classification be adopted for classification of accounts	} 2.4.19 2.4.20
32.	That service condition for account personnel be made more attractive and competitive examination introduced	
33.	That a qualifying examination in accounts be prescribed for all Officers	2.4.21
34.	That routine clerks should compulsorily pass an accounts examination before becoming entitled to promotion above certain grade	2.4.21
35.	That in heavy divisions S.A.S. accountants should be kept to perform duties of accountant	2.4.21
36.	That the accounts branch on large River Valley Projects should be split up into a number of sections each headed by a senior accountant	2.4.21
37.	That recruitment of workcharged and other establishment be made through the Employment Section of the Project	3.1.3
38.	That a Time-Keeping system be adopted in workshops as described in Appendix V	3.1.5
39.	That each shop should be under a chargeman and Time-Officer under a Time-Keeper	3.1.5
40.	That Eoreman or Sub-Divisional Officer should be incharge of two or more shops	3.1.5

(1)	(2)	(3)
41.	That hours of work be fixed according to Factory Act and that Sanction for overtime be obtained in form W-5	3.1.6
42.	That wages for half hour should be disallowed for late attendance of 5 to 15 minutes and one hour's wages for late attendance exceeding 15 minutes but not exceeding 30 minutes	3.1.7
43.	That a worker leaving the work before expiry of day's shift should be allowed only proportionate wages for the period he actually worked	3.1.7
44.	That leave should be granted and holidays observed according to Factory Rules	3.1.8
45.	That annual proforma accounts of each workshop should be prepared in forms and details prescribed by Government in consultation with Accountant General	3.2.4
46.	That there should be a requisition in form W-1, sanctioned estimate for each job and also a deposit in case of private jobs	3.2.5
47.	That access to the token Board should be provided for only 5 minutes before commencement of shifts	3.2.6
48.	That late-comers should be given their tickets at the window of the Time Office	3.2.6
49.	That the Time-Keeper should report daily total No. of each category of labour present to the Officer I/C of the workshop	3.2.7
50.	That the Charge-Man should keep a record of each worker of jobs on which each worked on a shop board	3.2.8
51.	That the chargeman should complete Time Card in form No. 21	3.2.9
52.	That Gate Pass in form T/K-7 should be used for all articles going out of gate	3.2.10
53.	That Gate Passes should be signed by an Officer not below the rank of Foreman	3.2.10
54.	That Gate Pass should be checked at the gate by the Time Office and Watch and Ward Staff who should sign it in token of check of passing materials, etc. as entered in it	3.2.10
55.	That the counterfoil of Gate Passes should be frequently verified by Accountant by a tally with original copies	3.2.10
56.	That Gate Pass should also be used in case of staff going out on duty	3.2.11
57.	That no Gate Pass should be necessary in case of accident, and that the person concerned should be marked present for the whole morning or afternoon term in which the accident occurred	3.2.12
58.	That payment of wages to staff other than that employed on monthly basis be made weekly or so notifying the same two days before	3.2.13
59.	That the Time-Keeper should prepare a form W-7 of wages allocation sheet and send to Divisional Office	3.2.14
60.	That the foreman should maintain a register in form W-8 of the time for which each worker is employed each day	3.2.15
61.	That each shop having machines with tools etc. should be provided with a lock-up cupboard with a list of the tools fixed on the inner side of the door	3.2.16

(1)	(2)	(3)
62.	That each workman taking charge of the machine should check tools, etc. with the list	3.2.16
63.	That special tools, jigs etc. should be obtained under Foreman's signatures who will be responsible till their return to Stores or transfer elsewhere	3.2.17
64.	That the Foreman should obtain foundry materials from Stores in quantities sufficient roughly for a month	3.2.18
65.	That the cost of Stores drawn for foundry should remain charged to suspense work order till its eventual transfer to jobs concerned or stores	3.2.18
66.	That there may be created a sub-Stores in a workshop & that stores drawn should be charged to Stores suspense work order ..	3.2.19
67.	That the balance under Store suspense work order should be cleared by transfer to jobs concerned or Stores	3.2.19
68.	That the Store from workshop Store should be issued on form N-13 and the Store-Keeper send the receipted indent daily to H.O. with a covering list in form W-6	3.2.20
69.	That the Store-Keeper should complete Bin Card form N-10 and prepare in duplicate form W-6 as transactions occur and send the indents to Head Office	3.2.20
70.	That the Divisional Officer should maintain a Store Ledger in form N-18 and prepare material analysis in form W-10 by jobs	3.2.20
71.	That over-head charges should be levied on all jobs to fix their total cost	3.2.21
72.	That no work should be undertaken in a workshop without an order in form W-2	3.2.22
73.	That there should be a work order in form W-2, job card in duplicate in form W-3, and an entry made in Job Register in form W-4 ..	3.2.22
74.	That the entries in job card in respect of labour should be filled in by the foreman and those for Stores from the Store-Keeper report in form W-6	3.2.23
75.	That the total of Pay roll should be agreed by Divisional Accountant with that of sheet in form W-7	3.2.24
76.	That the register of work order & job cards should be completed on completion of a job and an entry in a ledger in form W-11 made ..	3.2.25
77.	That at end of every month over-heads should be levied on all completed jobs & adjustment made to clear workshop suspense	3.2.26
78.	That a monthly schedule of workshop suspense be prepared in a manuscript form on the lines of form CPWA 67	3.2.27
79.	That a monthly consolidated account of workshop suspense by jobs should be kept in CPWA form 67	3.2.28
80.	That there should be no balance under General charges suspense at the commencement of fresh year—the balance if any being adjusted by credit to R.R. on capital account or by write off under order of competent authority	3.2.29
81.	That a bill in form W-12 should be issued for acceptance or payment ..	3.2.30

(1)	(2)	(3)
82.	That a proforma account should be prepared at end of the year to show the financial aspect of the shops, the existing centage charges for over-head reviewed and new ones determined for the ensuing year ..	3.2.32
83.	That a Decimal system of Classification should be adopted for Stores ..	4.3.2
84.	That maximum and minimum limits be fixed on each item ..	4.3.2
85.	That the maximum limit should not exceed the minimum limit by more than the requirement for one year	4.3.4
86.	That the minimum limit for stock should not exceed 6—8 weeks requirements in the case of local supplies. A higher limit may be fixed in the case of imported articles	4.3.6
87.	That bulking of orders for purchases should be limited to 3 months requirements	4.3.9
88.	That mechanical equipment should be standardised, and the supply of spare part during life time of a machine should be made a condition of the purchase	4.3.11
89.	That the prices of spares should also be controlled	4.3.11
90.	That there should be constituted a Stores Purchase Committee with full powers to make purchases direct and a senior officer of Ministry of I&P or Store Purchase Officer made a member .. .	4.4.4
91.	That the Project Manager should normally be the Chairman of the Stores Purchase Committee, Store Purchase Officer of D.G. Supplies & Disposals, Chief Mechanical Engineer, Financial Advisor, and Chief Accounts Officers as Members and the Central Stores Officers as Member Secretaries	4.4.5
92.	That there should be an annual budget for purchase of Stores approved by the Committee before placing orders	4.4.6
93.	That the Chief Stores Officer should be placed directly under the Project Manager	4.4.7
94.	That Demands for urgent and immediate purchases should be kept to the minimum	4.4.9
95.	That the powers of Officers to make emergent purchases should be clearly defined	4.4.10
96.	That shortages in consignments should be immediately notified to the supplier	4.5.6
97.	That payment for shortages should be made and charged to Misc. Advances in case Railways have accepted it and granted a "Short Certificate"	4.5.6
98.	That payment for railway freight should be made by cheque and cash	4.5.7
99.	That the bills for supplies should be entered in a register in form N-12	4.5.8.1
100.	That the bills for supplies should invariably contain references to purchase orders and Railway Receipts	4.5.8.1
101.	That the Stores Received Book should be completed in respect of rate and amount etc. as soon as the bill is received	4.5.8.2

(1)	(2)	(3)
102.	That a supplementary Stores Received Book should be prepared if necessary in respect of incidental charges etc., so that the two Stores Received Books will tie up the accounts between the value of the Stores received and the actual expenditure through cash book ..	4.5.8.2
103.	That the Officer receiving the Stores should check the bill with entries made in the relative Stores Received Book and Purchase Order and record a certificate of verification	4.5.8.3
104.	That all purchases of stores should be passed through Stock Accounts	4.6.1
105.	That all purchases of stores should pass through Purchase account in the first instance and clearance effected as bills are paid	4.6.2
106.	That the Purchase Register should contain a reference to Stores Received Book No. and Date, R/R No. and Date, Purchase Order and names of a few prominent items	4.6.3
107.	That a monthly Abstract of Stores Received Books should be prepared sub-divided by Stock Sub-heads in form N-11	4.6.4.3
108.	That one copy of the Store Received Book should be used for posting the Store ledger	4.6.4.4
109.	That monthly reconciliation of the value of Abstract of Receipts should be carried out with figures in the Purchase Register and total in the ledger under each stock sub-heads	4.6.5.1
110.	That pressure gauges should be used for checking the quantity of gases etc.	4.6.5.2
111.	That stores receiving officer should notify the receipt of stores to the indentors promptly	4.6.6
112.	That the first purchase price should be adopted as standard price for that store for the duration of the project except for violent fluctuations	4.7.1.3
113.	That issue rates for an article of store should be worked out again when violent fluctuations are noticed	4.7.1.3
114.	That the original Stores Received Book with Stores should be sent by the Officer receiving the stores to Store holder who after completing the Stores Received Book in respect of Bin Card No. etc., should return it to that officer for completion of the other two copies and pass on the original to Divisional Office for further processing ..	4.7.2
115.	That Bin Cards should be posted immediately on receipt of articles in the Stores	4.7.3.1
116.	That a new Bin Card should be issued only under the signature of the officer holding the store	4.7.3.1
117.	That there should be separate stores for combustible materials ..	4.7.3.1
118.	That issue rate should be mentioned on the bin cards	4.7.3.2
119.	That the indents for stores in form N-13 should be prepared in triplicate in indelible ink or with copying pencil	4.7.4.1
120.	That two copies of the indents in form N-13 should be presented at the Stores out of which one copy should accompany the stores supplied	4.7.4.1
121.	That the two copies of the indents presented at the stores should be completed after issue of the stores and registered in Store Issue Book form N-14	4.7.4.2

(1)	(2)	(3)
122.	That the person collecting the Stores should sign the Stores copy and the Store-Keeper the copy intended to accompany the Stores in token of having received the Stores and issued the stores respectively ..	4.7.4.2
123.	That three copies of the Stores Issues Book form N-14 should be prepared	4.7.4.3
124.	That an abstract of Stores Issue Books grouped by sub-heads of Stock and each group classified by works and its sub-heads should be prepared in from N-16	4.7.6.3
125.	That each Sectional Store holder should prepare separate Store Issue Books for the different sub-heads of Stock daily for the issues, total being carried forward from page to page for an accounts month ..	4.7.7.1
126.	That Sectional Store holders should prepare also an abstract of the indents supplied for each work and its sub-heads and post it under proper sub-head of stock in form N-15	4.7.7.1
127.	That form N-15 should be posted daily from Stores Issue Book and an abstract in form N-16 prepared at the close of a month ..	4.7.7.1
128.	That at the close of a month each Sectional Store holder should submit a set of Stores Issue Books and a copy of the monthly abstract of issues to the Officer who compiles the account of the Stock ..	4.7.7.2
129.	That the officer should consolidate all the abstract in a monthly abstract form for his entire charge to give the values of the Stores issued by stock sub-heads, by work and its sub-heads and by the fundamental heads of account	4.7.7.2
130.	That one Card for tools in form N-24 should be prepared for each item of plant (Plant Card) and one card for each employee. "Personnel Card"	4.7.8.3
131.	That one corner of the plant card should be cut off to distinguish it from the "Personnel Card"	4.7.8.3
132.	That the Store-Keeper while issuing tools should note employees No. on the Plant Card and Plant No. on the Personnel Card	4.7.8.5
133.	That Store Price Ledger should be maintained for the reconciliation of receipts, issues and balance of Stock	4.8.1.1
134.	That the ledger should be posted from Stores Received Book and Stores Issue Book	4.8.1.2
135.	That each ledger should have a few pages at the end reserved for abstracting transactions	4.8.1.2
136.	That a copy of ledger abstract should be given to Accounts Branch for financial reconciliation	4.8.1.3
137.	That financial reconciliation of Stock Account should be gradually and regularly carried out by one or two sub-heads each month ..	4.8.1.4
138.	That the discrepancy between the financial account and ledger account should be adjusted on a pro-rata basis	4.8.1.5
139.	That the adjustment of profit and loss should be carried out annually ..	4.8.1.7
140.	That the physical verification of the ground balances and reconciliation of value account of the same sub-heads should be simultaneously carried out in the same month, and that a perpetual inventory of stores be made	4.8.1.8

(1)	(2)	(3)
141.	That a detached Store sub-division should be maintained at site of work, if necessary, subordinate to the main Store	4.8.2.1
142.	That the main Store should issue materials to detached stores as transfer of stock	4.8.2.2
143.	That the sub-store should send monthly abstract of their own ledgers to H.O. for reconciliation	4.8.2.3
144.	That the sub-store should be kept posted with the revised issue rates for materials	4.8.2.4
145.	That there should be a special officer set apart for Stock taking ..	4.8.3.3
146.	That stores verification should be carried out according to a programme	4.8.3.4
147.	That the Stock Verifier should report also the condition of stores ..	4.8.3.4
148.	That the subordinate incharge of stores should render all possible help to Stock Verifier in his work	4.8.3.5
149.	That bin cards should be brought up-to-date before a Section is put to physical check	4.8.3.5
150.	That Stock Verifier should prepare a report of verification in form N-19	4.8.3.5
151.	That Store of allied nature should be verified at the same time. ..	4.8.3.5
152.	That stock taking should be carried out in the presence of a representative of the Store Holder	4.8.3.5
153.	That articles like coal, coke etc. should be checked by weighing or counting on average sample	3.8.3.5
154.	That the verification report should be prepared in quadruplicate ..	4.8.3.6
155.	That the stock verifier should initial and date the bin cards of the articles checked by him	4.8.3.7
156.	That the discrepancies noticed in stock taking should be carefully inquired into to know the cause	4.8.4.1
157.	That the discrepancies should be written off, recovered or adjusted under proper authority	4.8.4.2
158.	That prompt action should be taken to correct the account without delay	4.8.5.1
159.	That "Charged Stores" should be indicated as such	4.9.2
160.	That Articles pertaining to the 'Returned Stores' should be returned on form N-17	4.9.3.2
161.	That scraps and empties etc., should be returned on form N-17 ..	4.9.4
162.	That the Central Store Organisation should also handle, articles of tools and plant	4.9.5
163.	That Stores should be located at sites involving minimum carriage etc.	4.10.1
164.	That lack of space should be avoided by having gangways of the size as necessary only	4.10.2.1

(1)	(2)	(3)
165.	That heavier goods should be stored in lower bins	4.10.2.2
166.	That there should be at least four feet clearance from roof ..	4.10.2.2
167.	That Articles should be judiciously stored in bins	4.10.2.2
168.	That Steel Racks should be used with bigger bins at the bottom and smaller at the top	4.10.3
169.	That adequate arrangement should be made to provide good light in Stores	4.10.4
170.	That arrangement to keep off dust should be made	4.10.5
171.	That stores should be protected with wrappers anti-rust paint etc. ..	4.10.6
172.	That bins should be lettered and numbered at an eye level in letters and figures at least 3" high. Numbers should run from left to right ..	4.10.7
173.	That colour should be used for identification of materials, if necessary ..	4.10.7
174.	That fire extinguishers and fire buckets should be placed at convenient intervals in stores	4.10.8.1
175.	That fire fighting squads be formed from among the staff and fire fighting drills held	4.10.8.1
176.	That notice boards prohibiting smoking should be hung at the entrance of the Stores	4.10.8.2
177.	That adequate security measures should be adopted by frequent checking and providing overalls etc. and store yards well lighted ..	4.10.9
178.	That personnel for stores should be given training in the job ..	4.11.2
179.	That accounting machines should be introduced in large stores ..	4.12.1
180.	That units for bidding, measurement and payments should conform to a Standard Estimating Practice	5.2.1
181.	That Manual should be got out on the Standard methods of measurements	5.2.2
182.	That Estimates should be prepared in details to enable distribution of cost into elements of work	5.3.4
183.	That estimates should show physical quantities of work also ..	5.5.1
184.	That a Unit Price Contract is preferable to all other types	5.8.1
185.	That the composition of specification of work should be systematic and logical	5.9.1
186.	That the language of the contract document should be free from ambiguities	5.9.2
187.	That there should be a clause in the agreement invalidating all commitments in relation to the contract from any but legally authorised sources	5.9.3
188.	That a pre-selection of contractors be based on qualifications ..	5.10.1
189.	That the lowest tenders should be accepted from among the pre-selected contractors	5.10.2

(1)	(2)	(3)
190.	The Project Organisation should have the following Cells :—	
	1. Cost Engineer.	
	2. Construction Officer.	
	3. Construction Engineer.	
	4. Field Engineer.	
	5. Chief Store Officer.	
	6. Administrator.	
	7. Development Officer.	
	8. Financial Adviser	5.12.3
191.	That flow diagrams should be used for planning works	5.14.1
192.	That equipment should be properly planned	5.16.1
193.	That labour requirements should be planned	5.17.1
194.	That a Costing Section is necessary to control costs	5.18.2
195.	That the cost system should be flexible	5.20.1
196.	That costing organization should be conversant with technical aspects of work	5.21.1
197.	That punctuality in submission of data should be ensured	5.21.1
198.	That when exact figures are not available best approximation may be made	5.21.1
199.	That the Costing Section should be under a competent Cost Engineer	5.21.2
200.	That each official should keep a diary to record all essentials regarding work under him	5.24.2
201.	That Daily Reports should be submitted for works, materials, labourers, field repairs and outputs	5.29.1 5.29.9
202.	That units of measurement should be the same as the units in the estimates	5.30.1
203.	That monthly reconciliation of figures for quantities of work and expenditure be made between the costing and accounts sections ..	5.32.1
204.	That monthly progress reports should be prepared on the prescribed forms, giving quantities of work done, unit rates obtained and variations in cost	5.36.1
205.	That the C.P.W.A. Forms 1 to 6, 13 to 19, 23 to 28, 31 to 32, 39, 42 to 46, 48 to 86 and 88 to 98 should be retained intact	6.1.2
206.	That the original C.P.W.A. Forms 7 to 12, 21, 22, 29, 35 to 38 may be deleted	6.1.3
207.	That the C.P.W.A. Forms, 33, 34, 40, 41 should be amended ..	6.1.4
208.	That new forms N-1 to N-39 should be introduced	6.1.5

(1)	(2)	(3)
209.	That the original C.P.W.A. Forms 7—Indents for Stores should be replaced by a new Form N-13	6.2.1
210.	That the old form C.P.W.A. 8—Register of Stock Receipts Issues should be replaced by a bin card in form N-10	6.2.2
211.	That the old form C.P.W.A. 9 of Abstract of stock receipts should be replaced by form N-11	6.2.3
212.	That the old form C.P.W.A. 10 of Abstract of stock issues should be replaced by form N-16	6.2.4
213.	That the old forms C.P.W.A. 11 and 12 should be replaced by form N-10 & N-18	6.2.5
214.	That the old form C.P.W.A. 21 of Muster Roll should be abolished and a system of Time-Keeping described in Appendix V adopted	6.2.6
215.	That old form 23 of Measurement Book should be replaced by form N-8 of Store Received Book in the case of supplies only	6.2.7
216.	That the old form 29 of pay bill of work-charged establishment should be replaced by a new form N-23 of Pay Roll	6.2.8
217.	That the old C.P.W.A. forms 33 and 34 of Work Abstract should be replaced by new form N-34	6.2.9
218.	That the old forms of M.A.S. accounts Nos. 35 to 38 be abolished and only a register in form N-36 maintained with a supplementary register of daily transactions	6.2.10
219.	That the old forms 40 & 41 of Register of work be replaced by the new form N-35	6.2.11
220.	That the Field Engineers should send their requirement of stores on form N-1 in duplicate to Construction Engineer	6.3.1
221.	That the enquiries from supplier be standardised regarding stores and issued on form N-2	6.3.2
222.	That the order for supply of stores be issued on the new form N-3 prepared in as many copies as necessary, at least 6	6.3.3
223.	That a copy of Purchase Orders issued in form N-3 should be supplied to each of the supplier, Officer receiving the store, Officer holding the store, ultimate user, Accounts Branch and the sixth used as office copy	6.3.3
224.	That a consolidated record of all the purchase orders should be maintained in a register in form N-4 by the Procurement Officer	6.3.4
225.	That a register of Railway Receipts be maintained in form N-5	6.3.5
226.	That prompt action for disposal of rejected stores should be taken. A form N-6 Rejection Memo has been proposed	6.3.6
227.	That a consolidated record of all rejection should be maintained in a register in form N-7	6.3.7
228.	That new form N-8 of Stores Received Book should be used to record entries of receipts of all stores and that it should be prepared in triplicate by sub-heads of stock in indelible ink or copying pencil in accordance with the instructions	6.3.8

(1)	(2)	(3)
229.	That one copy of the Stores Received Book with necessary certificate of verification should be sent to the disbursing officer for making payment and posting of Stores Price Ledgers	6.3.8
230.	That the third copy of form N-8 should be utilised to prepare monthly Abstract of Stores Received	6.3.8
231.	That Store Received Books should be given the same attention and importance as is given at present to measurement books	6.3.8
232.	That a register of Bin Cards issued should be maintained in form N-9 as a permanent record	6.3.9
233.	That there should be a Bin Card in form N-10 for each item of Stores	6.3.10
234.	That the new form N-11 of abstract of stores received be prepared by stock sub-heads	6.3.11
235.	That the disposal of Bills for supplies should be watched through a register in form N-12	6.3.12
236.	That stores should be drawn on the new form N-13	6.3.13
237.	That the new form N-14 of Stores Issue Book should replace the old form 10 and should be prepared by sub-heads of Stock classified by works and its sub-heads	6.3.14
238.	That each Sectional Store Holder should prepare separate Store Issue Books for different sub-heads of stock daily	6.3.14
239.	That each Store holder should prepare an abstract of Issue Indents in form N-15 for each work and its Sub-heads day-to-day	6.3.15
240.	That a monthly abstract of issues in form N-16 should be prepared by Sub-heads of stock from Store Issues Books	6.3.16
241.	That for all goods previously issued and required to be returned to Stores form N-17 of Return Note should be used	6.3.17
242.	That a Store Price Ledger in form N-18 should be maintained	6.3.18
243.	That results of all physical verifications of stores should be reported on form N-19	6.3.19
244.	That a programme of physical verification of stores should be maintained in a register in form N-20	6.3.20
245.	That a Time Card in form N-21 should be maintained for each worker	6.3.21
246.	That a Time Check Sheet in form N-22 should be maintained by the Time-Keeper	6.3.22
247.	That payment to workmen should be made on the new form N-23 of Pay Roll	6.3.23
248.	That a record of movements of Tools should be kept in a Tool Card } form N-24	5.7.8 6.3.24
249.	That a ledger in form N-25 should be maintained for each equipment	6.3.25
250.	That the time for which a machine has worked should be summarized in form N-26 for distribution of cost of jobs	6.3.26
251.	That a report of daily issue of stores for machines should be reported in form N-27	6.3.27

(1)	(2)	(3)
252.	That a daily report of the use of automobile should be prepared in form N-28	6.3.28
253.	That daily output of machines should be reported on form N-29 ..	6.3.29
254.	That the daily output by manual labour should be reported in form N-30	6.3.30
255.	That a statement for monthly production by machines be prepared in form N-31	6.3.31
256.	That a cost report of mass concrete should be submitted in form N-32	6.3.32
257.	That estimates should be framed in new form N-33	6.3.33
258.	That the work abstract be prepared in form N-34	6.3.34
259.	That a new form N-35 should be used for Register of Works	6.3.35
260.	That Sub-store register for stores issued for Materials at site should be maintained	6.3.36
261.	That field repairs should be reported daily in form N-37	6.3.37
262.	That daily report of accidents and break-down be sent in form N-38	6.3.38
263.	That daily mass concrete report should be sent on form N-39 ..	6.3.39



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APPENDIX I

BIBLIOGRAPHY

1. Report on Cost Accounting and Productivity in U.S.A. by a group of European Experts sent under the auspices of the Organisation for European Economic Cooperation.
2. Technical Report on Accounting and Cost Keeping of the Department of Engineering Construction, Miami, Consequency Department, State of Ohio, U.S.A., by Canes, Chief Accountant.
3. Bureau of Reclamation Manuals.
4. Norris Dam Report (T.V.A.).
5. Plant and Machinery Committee Report.
6. Memorandum of Accounts at Hirakud Project.
7. Memorandum of Accounts at Chambal Project.
8. Indian Railways Codes for Stores.
9. Stock Control and Store-keeping by British Institute of Management.
10. Stores and Stores Audit Manual issued by British Institute of Management.
11. Railway Construction in India—Plant and Stores by N. K. Roy.



APPENDIX II

DECIMAL SYSTEM OF CLASSIFICATION OF DETAILED HEADS AND THEIR SUB-HEADS

- 10.00 Preliminary Expenses.
- 11.00 Dam and Spillway.
- 12.00 Power houses and allied works.
- 15.00 Weirs and Barrages.
- 16.00 River training and diversion works.
- 17.00 Main Canal and Branches.
- 18.00 Distributaries and Minors.
- 19.00 Flood Control and Drainage Works.
- 20.00 Navigation.
- 21.00 Relocation of highways and railways.
- 22.00 Communications.
- 23.00 Power Generation.
- 24.00 Power Transformation, Transmission.
- 25.00 Power Distribution and Supply.
- 26.00 Ground Water.
- 27.00 Soil Conservation and Land Reclamation.
- 28.00 Fish and Games, Reservoir, Navigation, Recreation.
- 29.00 Gates allied fixture and equipment.
- 30.00 Township.
- 31.00 Construction Plant and Equipment.
- 32.00 Construction Plant and Equipment Operation.
- 33.00 Bandhs and Tanks.
- 34.00 Suspense.
- 35.00
- 36.00
- 98.00
- 99.00 General Services—Operation and Maintenance, Police, Posts and Telegraphs, Fire Protection Watch and Ward, Health and Sanitation, Medical Facility and Water Supply and Sewage, Camp Operation Maintenance.
- 10.10.00 Preliminary Expenses.
- 11.00 Reconnaissance.
- 12.00 Topographical Surveys and Mapping.
- 13.00 Geological Surveys.
- 14.00 Hydrological and Meteorological Surveys.
- 15.00 Economic Surveys.
- 16.00 Laboratory Tests.
- 17.00 Consultant's fees.
- 18.00 Preparation of Preliminary Projects.
- 19.00
- 20.00
- 12.10.00 Masonry Dam (Concrete-Stone Masonry) & Spillway.
- 11.00 Site Clearance.
- 12.00 Roads etc.
- 13.00 Electric Distribution System.

- 14.00 Fire Alarm System.
- 15.00 Drainage.
- 16.00 Landscaping.
- 17.00 Photography.
- 18.00 Land.
- 19.00 Excavation of foundation.
- 20.00 Building.
- 21.00 Plantation.
- 22.00 Gates, sluices, water conduits and intake structure.
- 23.00 Mechanical fittings.
- 24.00 Bridges.
- 25.00 Buckets, Baffles.
- 26.00 Spillway piers.
- 27.00 Coffor Dams.
- 28.00 Tunnels.
- 29.00 Fitters.
- 30.00 Joints.
- 31.00 Instrumental fittings.
- 32.00 Miscellaneous Works.
- 33.00
- 34.00

13.10.00 Earthen or Rockfill dam.

- 11.00 Site Clearance.
- 12.00 Roads etc.
- 13.00 Electric Distribution System.
- 14.00 Fire Alarm System.
- 15.00 Drainage.
- 16.00 Landscaping.
- 17.00 Photography.
- 18.00 Land.
- 19.00 Excavation of foundation.
- 20.00 Building.
- 21.00 Plantation.
- 22.00 Gates, sluices, water conduits and intake structure.
- 23.00 Mechanical fittings.
- 24.00 Bridges.
- 25.00 Buckets, Baffles.
- 26.00 Spillway piers.
- 27.00 Coffor Dams.
- 28.00 Tunnels.
- 29.00 Fitters.
- 30.00 Joints.
- 31.00 Instrumental fittings.
- 32.00 Misl. works.
- 33.00
- 34.00

14.10.00 Power House and Allied Works.

- 11.00 Land.
- 12.00 Excavation and treatment of foundations.
- 13.00 Power House Building.
- 14.00 Crane and Hoisting equipment.

- 15.00 Gates.
- 16.00 Draft tubes.
- 17.00 Tail Race.
- 18.00 Upstream and Downstream regulators.
- 19.00 Pen stocks, surge towers etc.
- 20.00 Spiral casing.
- 21.00 Joints and Water stops.
- 22.00 Electric fittings.
- 23.00 Fire extinguishers.
- 24.00 Tanks.
- 25.00
- 26.00
- 15.10.00 Weirs and Barrages (Headworks).
 - 11.00 Site Clearance.
 - 12.00 Foundation excavation and treatment.
 - 13.00 Superstructure.
 - 14.00 Gates, quantities.
 - 15.00 Bridge and gangway.
 - 16.00 Aerial ropeways, telephones, cabins.
 - 17.00 Head.
 - 18.00 Downstream protection works.
 - 19.00 Buildings including lighting, water supply.
 - 20.00 Miscellaneous works.
 - 21.00 Land.
 - 22.00
 - 23.00
- 16.10.00 River training and diversion works.
 - 11.00 Bunds.
 - 12.00 Groynes and spurs.
 - 13.00 Cuts.
 - 14.00 Coffor dams.
 - 15.00 Tunnels.
 - 16.00 Levels and size embankments.
 - 17.00 Land.
 - 18.00
 - 19.00
- 17.10.00 Main Canal and Branches.
 - 11.00 Head.
 - 12.00 Channels excavation and embankments liner, service road.
 - 13.00 Regulators, Bridges and Falls.
 - 14.00 Gauging.
 - 15.00 Drainage crossing and inlets.
 - 16.00 Other works.
 - 17.00 Escapes.
 - 18.00 Buildings.
 - 19.00 Plantations.
 - 20.00 Mills (Water & Wind)
 - 21.00 Land.
 - 22.00
 - 23.00

18.10.00 Distributaries and Minors.

- 11.00 Minors.
- 12.00 Channel excavation embankment, lining service road.
- 13.00 Regulators, bridges and falls.
- 14.00 Other works.
- 15.00 Drainage crossings.
- 16.00 Escapes.
- 17.00 Buildings.
- 18.00 Water courses, culverts, outlet, meters.
- 19.00 Plantations.
- 20.00 Land.
- 21.00
- 22.00

19.11.00 Diversion.

- 12.00 Spreading of Flood Waters.
- 13.00 Channel Rectification.
- 14.00 Channel Enlargement.
- 15.00 Channel Cleaning.
- 16.00 Embankment.
- 17.00 Reservoirs.
- 18.00
- 19.00

20.10.00 Navigation.

- 11.00 Dredging Operations.
- 12.00 Wharfs, quays, jetties etc.
- 13.00 Boat, tugs, barges, steamer.
- 14.00 Gauging and control.
- 15.00 Buildings.
- 16.00 Land.
- 17.00
- 18.00

21.10.00 Relocation of highway and Railway.

- 11.00 Clearance.
- 12.00 Deforestation.
- 13.00 Rim Treatment.
- 14.00 Road Bridges.
- 15.00 Embankments.
- 16.00 Buildings.
- 17.00 Gauging.
- 18.00 Recreation.
- 19.00 Fishing.
- 20.00 Parks etc.
- 21.00 Land.
- 22.00
- 23.00

22.10.00 Communication.

- 11.00 Roads.
- 12.00 Railways.
- 13.00 Tramways.
- 14.00 Rolling stock and locomotives.

- 15.00 Buildings.
- 16.00 Plantations.
- 17.00 Land.
- 18.00
- 19.00
- 23.10.00 Power Generation.
 - 11.00 Feed Pumps.
 - 12.00 Boilers.
 - 13.00 Turbines, steam, water.
 - 14.00 Diesel Engines.
 - 15.00 Generators.
 - 16.00 Governors.
 - 17.00 Control Equipment.
 - 18.00 Switch Gear.
 - 19.00 Insulators.
 - 20.00 Spray Tanks or an alternative cooling arrangements.
 - 21.00 Elevators.
 - 22.00 Conduits.
 - 23.00 Wiring and cables.
 - 24.00 Flutues.
 - 25.00 Protective Equipment.
 - 26.00 Compressed air.
 - 27.00 Fire Protection.
 - 28.00 Forced draught.
 - 29.00 Induced draught.
 - 30.00 Feed water heaters or economisers.
 - 31.00 Chimney.
 - 32.00 Coal handling equipment or conveyors.
 - 33.00 Soot blowers.
 - 34.00 Automatic feed check valves.
 - 35.00 Feed water arrangement (tubewell, etc.) and water for other pumps.
 - 36.00 Condensers.
 - 37.00 Circulating water pumps and motors.
 - 38.00 Spray pipe line.
 - 40.00 Coal bunkers.
 - 41.00 Ash handling equipment.
 - 43.00 Boiler foundation with enloins.
 - 44.00 Boiler house building.
 - 45.00 Turbine room building.
 - 46.00 Oil storage tanks and arrangement.
 - 47.00 Storage tank of water if and where necessary.
 - 51.00 Other recording instruments like Carbon dioxide recorder or monrecorders, steam recorders, etc.
 - 52.00 Special tools and plant for maintenance and construction.
 - 53.00
 - 54.00
- 24.10.00 Power Transformation, Transmission.
 - 11.00 Foundations, Platforms, supports, etc.
 - 12.00 Transformers.
 - 13.00 Protective Gear.
 - 14.00 Transmission Lines.

- 15.00 Step down transformers.
- 16.00 Compressed air.
- 17.00 Fire protection.
- 18.00
- 19.00
- 25.10.00 Power distribution and supply.
 - 11.00 L.T. Lines.
 - 12.00 H.P. Meters.
 - 13.00 Switch Gear.
 - 14.00 Transformers.
 - 15.00 Service lines.
 - 16.00 Domestic meters.
 - 17.00 Land.
 - 18.00
 - 19.00
- 26.10.00 Ground Water.
 - 11.00
 - 12.00
- 27.10.00 Soil conservation and Land Reclamation.
 - 11.00 Check Dams.
 - 12.00 Contour bunding.
 - 13.00 Terracing.
 - 14.00 Ridging.
 - 15.00 Planting trees, shrubs, etc.
 - 16.00 Gully Plugging.
 - 17.00 Land.
 - 18.00
 - 19.00
- 28.10.00 Fish and Games, Reservoir navigation, Recreation.
 - 11.00 Dam development and management of fisheries and fish life.
 - 12.00 Development and management of games, including tenels and mammals.
 - 13.00 Navigation on the Reservoir.
 - 14.00 Recreation.
 - 15.00 Land.
 - 16.00
 - 17.00
- 29.10.00 Gates allied fixture and equipment.
 - 11.00 Spillway gates.
 - 12.00 Intake gates.
 - 13.00 Sluice and outlet gates and valves.
 - 14.00 Draft tube gates.
 - 15.00 Garage gates.
 - 16.00 Regulator gates.
 - 17.00
 - 18.00
- 30.10.00 Township.
 - 11.00 Site clearance.
 - 12.00 Roads, etc.

- 13.00 Electric distribution.
- 14.00 Drainage system.
- 15.00 Sewerage system.
- 16.00 Water supply.
- 17.00 Residential buildings—Permanent.
- 18.00 Residential buildings—Temporary.
- 19.00 Streets, parks, pavements.
- 20.00 Recreation grounds.
- 21.00 Fire alarm.
- 22.00
- 23.00 Godowns.
- 24.00 Hospitals.
- 25.00 Police station.
- 26.00 Workshop building.
- 27.00 Cafeteria.
- 28.00 School.
- 29.00 Garages.
- 30.00 Land.
- 31.00 Fire station.
- 32.00 P & T Affairs and Wireless station.
- 33.00 Maternity centres, clubs, swimming pools.
- 34.00 Pumping station.
- 35.00
- 36.00
- 31.10.00 Construction Plant and Equipment.
 - 11.00 Site preparation.
 - 12.00 Time Office.
 - 13.00 Ware House, Tool House.
 - 14.00 Carpenters Shop.
 - 15.00 Machine Shop.
 - 16.00 Blacksmith Shop.
 - 17.00 Sheet Metal Shop.
 - 18.00 Drilling Sharpening Shop.
 - 19.00 Service Station.
 - 20.00 Railway siding.
 - 21.00 Compressed air.
 - 22.00 Raw Water System.
 - 31.00 Hauling Equipment.
 - 32.00 Excavation and Grading Equipment.
 - 33.00 Hoisting Equipment.
 - 34.00 Tractors.
 - 35.00 Wagon Drills.
 - 41.00 Primary Crushing Plant.
 - 42.00 Secondary Crushing and Screening Plant.
 - 43.00 Sand Plant.
 - 44.00 Conveyor System.
 - 45.00 Aggregate Storing and Reclaiming Plant.
 - 46.00 Cement Handling and Storage Plant.
 - 47.00 Concreting, Batching and Mixing Plant.
 - 48.00 Cableway Plant.
 - 49.00 Jack Hammers.
 - 50.00 Concrete Vibrators.
 - 51.00 Concrete Buggies and Buckets.

- 52.00 Portable Concrete Mixers.
- 53.00 Portable Air Compressors.
- 54.00 Portable Welders.
- 55.00
- 56.00 Dredgers.
- 57.00 Tractors and Dozers.
- 58.00 Scrapers.
- 59.00 Rakes.
- 60.00 Cranes, Winches and Cables.
- 61.00 Draglines.
- 62.00 Root Cutters.
- 63.00 Chain Saws.
- 64.00 Drills.
- 65.00 Pile Drivers.
- 66.00 Tow Boats.
- 71.00 Barges.
- 72.00 Drill Boats.
- 73.00
- 81.00 Office Furniture.
- 82.00 Office Equipment.
- 83.00 Engineering Equipment.
- 84.00
- 32.10.00 Construction Plant and Equipment Operation.
 - 11.00 Carpenters shop operation.
 - 12.00 Blacksmith shop operation.
 - 13.00 Electric shop operation.
 - 14.00 Compressor Air operation.
 - 15.00 Reinforcing yard operation.
 - 16.00 Excavation and grading equipment operation.
 - 17.00 Hoisting operation.
 - 18.00 Tractor operation.
 - 19.00 Wagon Drill operation.
 - 20.00 Primary crushers.
 - 21.00 Secondary Crushing and Screwing plant.
 - 22.00 Sand Plant operation.
 - 23.00 Conveyor Plant operation.
 - 24.00 Aggregate storage and Reclamation.
 - 25.00 Concrete mixer plant operation.
 - 26.00 Job Rail Road operation.
 - 27.00 Cableway operation.
 - 28.00 Tow boat operation.
 - 29.00
 - 30.00
- 33.10.00 Bandhs and Tanks.
 - 11.00 Site Clearance.
 - 12.00 Rooting.
 - 13.00 Embankment.
 - 14.00 Gates Regulators.
 - 15.00 Rip Rap.
 - 16.00 Miscellaneous.
 - 17.00 Land.
 - 18.00
 - 19.00

34.00.00 Suspense.

34.10.00 Stock.

11.00 Purchases.

12.00 Miscellaneous Advances.

13.00 Workshop Suspense.

14.00 General Plant.

15.00 Mobile Equipment.

16.00 Concrete Plant.

17.00

18.00

99.00.00 General Services Operation and Maintenance.

11.00 Police.

12.00 Posts & Telegraphs.

13.00 Wireless Station.

14.00 Watch and Ward.

15.00 Fire Protection.

16.00 Medical, Health and Sanitation.

17.00 Social Service.

18.00 Education.

19.00 Accidents.

20.00 Recreation, Entertainments, Public Functions.

21.00 Training Centres.

22.00 Water Supply.

23.00 Lighting.

24.00

25.00



सत्यमेव जयते

APPENDIX III **LIST OF FORMS PROPOSED FOR CENTRAL WORKSHOP ON RIVER VALLEY PROJECTS**

<i>Form No.</i>	<i>Description</i>
T/K-1	Requisition for Labour Staff.
T/K-2	Appointment Card.
T/K-3	Service Card.
T/K-4	Identity Card.
T/K-5	Register of Identity Cards.
T/K-6	Register of Brass Tickets.
N-13	Indent for Stores.
N-21	Time Card.
N-22	Daily Check Sheet.
N-23	Pay Roll.
T/K-7	Gate Pass.
T/K-10	No Demand Certificate.
T/K-11	Pay Release Order.
W-1	Job Requisition Card.
W-2	Work Order.
W-3	Job Card.
W-4	Job Register.
W-5	Over-time Sheet.
W-6	Daily Report of <u>Receipt</u> of Stores.
W-7	Wages Allocation Sheet.
W-8	Daily Labour Allocation Sheet.
W-9	Work Analysis.
W-10	Material Analysis.
W-11	Cost Ledger.
W-12	Bill Form.

NOTE :— For forms of 'N' series *see* Appendix IV.
For forms of 'T/K' series *see* Appendix V.

W-1
(Para 3.2.5)

JOB REQUISITION CARD

ORIGINAL
DUPLICATE
TRIPLICATE

The Officer Incharge

Sir,

The following jobs may kindly be taken in hand in the workshop and delivery made by the date.....19 .

Indenting Officer

Particulars of work	Head of Account and name of work to which chargeable	Name and designation of Officer to whom delivery is to be made	Remarks with special instructions of specification of the job to be executed
1	2	3	4

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Officer Incharge

An estimate for the job should be prepared and sent to the indenting officer.

Dated.....19

Officer Incharge

Estimated amount Rs. _____	Job No. _____	Job completed on Date _____	Job delivered on Date _____	Invoice No. _____
-------------------------------	------------------	-----------------------------------	-----------------------------------	----------------------

Officer Incharge

No. _____ Date _____ 19 ____

Particulars of work. _____

By whom ordered. _____

Vide letter No. _____ Date _____
(Enclosures). _____

Special instructions. _____

Name of work to be charged with
service and departmental head. _____

Instructions for despatch. _____

Name of consignee,
Station and Address. _____

Date by which work should be
completed. _____

Date on which work put in hand. _____

Date of despatch of work _____ Invoice No. _____ Date _____

Orders of the Assistant Engineer _____

Amount to be billed Rs. _____ Bill No. _____ for Rs. _____

Adjusted in _____

Officer Incharge

W-3
(Para 3.2.27)

Work Order No. _____ Job No. _____
For whom undertaken _____
Name of work with particulars of service and detailed head of account _____

Date	Particulars	Name of shop	Labour	Store	Miscellaneous	Total
1	2	3	4	5	6	7

1. Add % of labour only, for general charges _____ TOTAL _____

2. Add % on total for indirect charges _____ TOTAL _____

For establishment, tools and plant, Accounts and Audit _____

TOTAL COST_____

Officer Incharge

W-4
(Para 3.2.22)

JOB REGISTER

Work No.	Order Date	Name and designation of requisition officer	Description of work	Requisition No. and Date	Heads of Account chargeable and name of work		
1	2	3	4	5	6		
		Estimated Amounts		Acceptance	Date of start	Date of completion	
Labour	Materials	Other charges	Total	No.	Date		
7	8	9	10	11	12	13	14
Reference to despatch invoice No. & date	Bill		Initial of Officer incharge	REMARKS			
15	No.	Date	18	19			
	16	17					

W-5
(Para 3.1.6)

ORIGINAL
DUPLICATE

OVER-TIME SHEET

To

The Executive Engineer-in-Charge.

Sanction is requested to the following over-time labour :—

Superintendent

Name	Designation	Job No.	No. of hours and days for which over-time is required
1	2	3	4

Reasons are :—

Increased rate of wages to be.....

Sub-Divisional Officer

Sanctioned

Officer Incharge

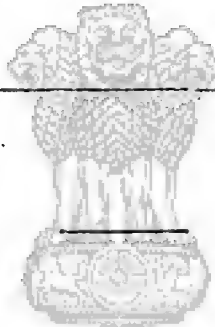
W-6
(Para 3.2.20)

ORIGINAL
DUPLICATE

Daily Report of Receipts/Issues of Stores for
of Section.

Serial No.	Indent/Invoice		Description of articles	Received from		Job No.
	No.	Date		Issued to		
1	2	3	4	5		6

Unit	Quantity weight or measurements	Rate	Amount	REMARKS
7	8	9	10	11



Officer Incharge

Cost Accountant

W-7
(Para 3.2.14)

WAGES ALLOCATION SHEET

Badge No.

Month—19 .
Rate of wage—
Rs. —

Date	Job No.	No. of hours	Job No.	No. of Hours	Job No.	No. of hours
1	2	3	4	5	6	7

Officer Incharge

Cost Accountant

W-8

(Para 3.2.15)

DAILY LABOUR ALLOCATION SHEET

Date _____ 19 .

Work- man No.	Forenoon				Afternoon			
	Job No.	From	To	Total	Job No.	From	To	Total
1	2	3	4	5	6	7	8	9

*Foreman**Cost Accountant*

W-9

(Para 3.2.14)

WORK ANALYSIS

Job No.		Job No.		Job No.		Job No.	
Workmen No.	No. of hours	Workmen No.	No. of hours	Workmen No.	No. of hours	Workmen No.	No. of hours
1	2	3	4	5	6	7	8

*Divisional Accountant**Officer Incharge*

W-10
(Para 3.2.20)

Month _____ 19 _____

MATERIALS ANALYSIS

Date	Job No.			Job No.			Job No.		
	Indt. No.	Item No.	Amount	Indt. No.	Item No.	Amount	Indt. No.	Item No.	Amount
1	2	3	4	5	6	7	8	9	10

Divisional Accountant

W-11
(Para 3.2.25)

COST LEDGER

Job No. _____ Name & Designation _____
Description of work _____ of Indenting Officer _____

Date	Direct labour charges	Materials	Misc. Expenses & T.A. etc.	General charges @ %	Machine shop charges
1	2	3	4	5	6

Indirect charges @ %	Establishment, tools & plants, accounts & audit @ %	Total cost	Reference to job register folio	Bill		
				No.	Date	Amount
7	8	9	10	11	12	13

Reference to acceptance		REMARKS
No.	Date	
14	15	16

Divisional Accountant

Divisional Officer

W-12
(Para 3.2.39)

ORIGINAL
DUPLICATE
TRIPLICATE

WORKSHOP BILL

Bill No..... Date.....

Name and designation of Indenting Officer.....

Description of work	Work order No.	Date	Requisition	
			No.	Date
1	2	3	4	5

Cost of work				Amount of Bill	Head of account to which debit and name of work
Labour	Material	Other charges	Total		
6	7	8	9	10	11

Date..... *Divisional Accountant* *Divisional Officer*

Accepted charge to the work and head of account shown in column 11.

Signature of Accepting Officer

Adjusted as per T.E. No.....of (Month).....19

Divisional Accountant

APPENDIX IV

STATEMENT SHOWING AMENDED AND PROPOSED FORMS

S.No. of Item	Description of Forms	No. of existing Form	No. of proposed Form	REMARKS
1	2	3	4	5
1.	Indent for Stores	7	N-13	Deleted.
2.	Register of Stock <u>Receipt</u> <u>Issue</u>	8	N-10 Bin Card	Deleted.
3.	Abstract of Stock Receipt	9	N-11	Deleted.
4.	Abstract of Stock Issue	10	N-16	Deleted.
5.	Half-yearly Balance Return of Stock	11	N-10 Bin Card	Deleted.
6.	Half-yearly Register of Stock	12	N-18 (Store Price Ledger)	Deleted.
7.	Muster Roll	21	N-21 Time card	Deleted.
8.	Casual Labour Roll	22		Deleted.
9.	Measurement Books	23	N-8 S.R.B.	Deleted. For use for bills for supplies only.
10.	Pay Bill of Work-charged Establishment	29	N-23 Pay Roll	Deleted.
11.	Works Abstract 'A'	33	N-34	Amended.
12.	Works Abstract 'B'	34		
13.	Detailed Statement of Materials compared with estimated Requirements	35	—	Deleted.
14.	Outturn Statement of Manufacture	36	—	Deleted.
15.	Report of Value and Verification of unused Materials	37	—	Deleted.
16.	Register of clearance of Suspense Head "Materials"	38	—	Deleted.
17.	Register of Works, A—for Major Works	40	N-35	Amended.
18.	Register of Works, B—for Minor Works	41		
19.	Purchase Requisition	—	N-1	New form.
20.	Enquiry Form for Stores	—	N-2	New form.
21.	Purchase Order for Stores	—	N-3	New form.
22.	Purchase Order Register	—	N-4	New form.
23.	Register of Railway Receipts	—	N-5	New form.

Statement showing Amended and Proposed Forms—*contd.*

1	2	3	4	5
24.	Rejection Memo	—	N-6	New form.
25.	Rejection Register	—	N-7	New form.
26.	Register of Bin Cards	—	N-9	New form.
27.	Bill Register	—	N-12	New form.
28.	Stores Issue Book	—	N-14	New form.
29.	Abstract of Issue Indents	—	N-15	New form.
30.	Stores Return Note	—	N-17	New form.
31.	Daily Stock Verification Report ..	—	N-19	New form.
32.	Register of Programme of Physical Verification	—	N-20	New form.
33.	Time Check Sheet	—	N-22	New form.
34.	Tool Card	—	N-24	New form.
35.	Equipment Ledger	—	N-25	New form.
36.	Distribution of Equipment Time Sheet	—	N-26	New form.
37.	Daily Report of Issue of Materials and Stores for Operation	—	N-27	New form.
38.	Daily Report of Automobiles	—	N-28	New form.
39.	Daily Report of Production by Machines	—	N-29	New form.
40.	Daily Report of Manual Labour	—	N-30	New form.
41.	Monthly Report of Production by Machines	—	N-31	New form.
42.	Cost Report—Mass Concrete ..	—	N-32	New form.
43.	Estimate	—	N-33	New form.
44.	Maukavar (Site) Account Register ..	—	N-36	New form.
45.	Daily Report of Field Repairs	—	N-37	New form.
46.	Daily Accident and Breakdown Report	—	N-38	New form.
47.	Daily Mass Concrete Report	—	N-39	New form.

PURCHASE REQUISITION**(To be Submitted in Duplicate by Field Officers on Procurement Office)**

Routine

Urgent

No. _____

Immediate

Date _____

Please arrange the following :—

1. Requisitioner's full name _____
Designation _____
Address _____
2. Purpose for which required _____

3. Delivery required by _____

4. Approved by _____

5. Place of supply _____
6. Name of consignee _____
7. Head of account to which cost is debitable _____
8. Stores to be booked by Goods/ Passenger/Train/Air lift _____
9. Special instruction _____
10. Full particulars of the materials required (as detailed below) :

Sl. No.	Code No.	To be filled by indentor				To be filled by store			RE-MARKS
		Description	Unit	Quantity	Rate per unit	Total estimated cost	Stock position	Qty. outstanding orders	
1	2	3	4	5	6	7	8	9	10

*Field Officer**Designation*

ENQUIRY FORM

Enquiry No. Date

FROM

To

_____*Enquiry for Details in Attached Sheet*

Please quote your lowest rates for the articles in the attached schedule, subject to the following conditions, contained in sealed covers :

1. Quotations will be received by up to
..... on They will be opened at
on before any suppliers who may want to be present.
2. Prices : Rates should be net f.o.r.....
3. Payment : Full payment of the price will be made to the supplier after the receipt of materials at site in good condition.

Any loss or damage during transit to site shall be made good by the supplier free of charge provided the same is notified within 15 days of the arrival of materials in godown. In case of insured goods, the supplier shall have to take up the matter with the Insurance Co.

Payment will be made by cheques on Reserve Bank at
..... Exchange Commission for issue of Bank Draft on Banks outside the State will be charged to the account of supplier.

4. *Leaflets and Descriptive Literature* : Full descriptive particulars, specifications and drawings of the equipment offered shall accompany the tender. Information regarding country of origin or manufacture of materials used in the manufacture of the article shall be furnished.

5. *Tests* : Manufacturers' test certificate for the routine tests in duplicate shall have to be furnished along with materials. The materials will be rejected, if the test results are not satisfactory.

6. *Delivery* : Supply is required within days of the placing of the order on your firm.

7. *Insurance, etc.* : Whether the quotation includes or excludes Sales Tax, Octroi, Packing and Forwarding charges, should be stated in the tender. Where these are not included in the quotation, the charges should be indicated separately.

8. The sealed cover containing the quotations shall make reference to Enquiry No. and date on the top left hand corner. This information shall also be given on the quotation itself.

Indenting Officer.

N-3
(Para 4.4.23)

PURCHASE ORDER

(Four copies to be prepared besides the Original)

No.....

Date.....

To

MESSRS. _____

DEAR SIRs,

Sub :—Order for _____

Please supply the under-noted articles at the rate offered by you in your Tender No. _____ dated _____ in Quotation _____ dated _____ subject to the terms and conditions mentioned in the attached sheet and the despatching instructions given on the reverse.

The order will be deemed to have been accepted by you if nothing is heard to the contrary by _____.

Schedule of Goods Ordered

Sl. No.	Description	Code No.	Qty.	Rate			Unit	Amount			REMARKS
				Rs.	a.	p.		Rs.	a.	p.	
1	2	3	4	5			6	7			8

Yours faithfully,

Signature

Designation

FOOTNOTE :—

A specific mention should be made whether the cost of packing and forwarding charges, sales tax, insurance, etc. will be borne by the Indentor or by the Supplier.

Copy forwarded to :—

1. Officer Receiving Stores.
2. Officer holding Stores.
3. Field Engineer.
4. Accounts Branch.

Despatching Instructions

1. Goods are to be despatched to securely packed fully insured* against loss or damage in transit/Railway risk, not later than the delivery date given by Passenger/Goods train, freight paid/ to pay to the consignee named below and the R/R along with Challan (in duplicate) should be sent by Registered Post to The Bill (in triplicate) should be forwarded to the In case, a consignment is sent freight paid, the money receipt for the amount paid to the Railway should accompany the supplying firms' bill. The two copies of the bill should be distinctly marked, original and duplicate. Purchase Order No. and date should be quoted in each bill and challan together with reference to invoice and R/R No. and date. One copy of the Challan duly receipted with relevant remarks regarding discrepancies and condition of goods if any, shall be returned to the supplier by the consignee immediately on receipt of goods.

2. The supplier shall, at his own expense, mark each bale or package distinctly with the consignees' name and address, gross weight, the name of supplier and distinctive numbers or marks which are also to be shown on the suppliers' packing account to be placed in each package.

3. If a consignment contains more than one package the serial number of each package will be indicated as a numerator and the total number of packages as the denominator. Thus the mark 3/10 will indicate package No. 3 out of a consignment of 10 packages.

4. In the case of spare part the make model and serial No. of the machine for which the spares are meant should also be given in invoices.

5. Invoices shall be prepared by packages in accordance with the packing lists.

Further special instruction, if any.

Name and full address of consignee.

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TERMS AND CONDITIONS

1. The rates mentioned in this order are firm and inclusive of customs, import duty, etc., if any, unless otherwise specified. Payment will be made in the Indian currency.

2. The date of delivery of the stores stipulated in this order shall be deemed to be the essence of the contract. In case of default buyer reserves the right to (i) recover from the supplier liquidated damages, or the value of goods not delivered, (ii) make good the deficiencies from any other source on account of and at the risk of the supplier, or (iii) cancel the contract.

3. Supplies must strictly conform to the approved specifications and/or drawings, sample, etc. Goods will be inspected at destination on arrival. If defects of any kind are noticed, they shall be intimated to the suppliers.

*Insurance shall be made according to the buyer's instructions.

N-4
(Para 4.4.26)

PURCHASE ORDER REGISTER

Sl. No.	Purchase Order		Name of supplier	Brief des- cription of stores	Code No.
	No.	Date			
1	2	3	4	5	6



Stipulated date of supply	Date of com- mencement of supply	Date of com- pletion of supply	Initial	REMARKS
7	8	9	10	11

N-5
(Para 4.5.1)

REGISTER OF RAILWAY RECEIPTS

Sl. No.	Date	Purchasing Railway Receipt				Station		Sender's name
		Order No.	Date	Number	Date	From	to	
1	2	3	4	5	6	7	8	9

To whom con- signed	Wagon No.	No. of packages	Actual weight	Weight charged	By goods or pass.	Freight Rate
10	11	12	13	14	15	16

To pay	Paid			Date of receipt	Weight of consign- ment	Description of contents packages
	Freight	Wharfage	Demurrage			
17	18	19	20	21	22	23

Credit Note No. & Date	Purchase Order No. and Date	S.R.B. No. and Date	Delivered to	Signature of Receipt Sec. incharge	REMARKS
24	25	26	27	28	29

N-6
(Para 4.5.5)

REJECTION MEMO

Station
Dated

MESSRS. _____

DEAR SIRs,

The following stores supplied by you vide your invoice No. _____ dated _____ on our Purchase Order No. _____ dated _____ have been rejected for the following reasons :

The rejected articles should be removed in _____ days of the receipt of this intimation, failing which they will be liable to be sold by public auction at your risk and cost.

Also please arrange to replace the supply within _____ days of the receipt of this letter or accept cancellation of the balance of order.

The removal of stores is subject to payment of the charges incurred by Government in taking delivery and carriage to stores premises etc.

Stores Rejected _____

Reasons _____

Yours faithfully,

Inspection and Receipt Officer

N-7
(Para 4.5.5)

REJECTION REGISTER

Purchase Order No. & Date	Description of Stores	Quantity		Supplier's Name
		No.	Weight	
1	2	3	4	5
Officer's Comments	Bill No. & Date	Store Returned <i>vide</i>		REMARKS
6	7	8	9	

N-8
(Para 4.5.4)

Book No.

STORES RECEIVED BOOK

(To be prepared in Triplicate)

Sl. No. of R/R Register &Project Date
No. of packages.....Division Place

Sl. No.	Name of supplier	Purchase Order No.	Order Date	Description of material	Store Code No.	Unit	Quantity received
1	2	3	4	5	6	7	8

Quantity accepted	Rate	Cost as per bill	Cost including incidental	Rate including all charges	Inspected & checked by	REMARKS
9	10	11	12	13	14	15

Signature of Store-Keeper

Packing and forwarding charges, Railway freight, sea freight, if any, incidental charges, insurance, and any other charges.

Total

Total of Bill—Y
% of incidental charges X on
total cost— $\frac{X}{Y} \times 100$

*Dated Signature and Designation
of the Officer entering
Measurements*

N-9
(Para 4.7.3)

REGISTER OF BIN CARDS

Date of issue	Bin Card No.	Name of article	Code No.	Signature of Issuing Officer	REMARKS
1	2	3	4	5	6

N-10
(Para 4.7.3)

BIN CARD

No.....

Article.....
Code No.....
Unit.....
Issue rate.....

Maximum stock.....
Minimum stock.....
Ordering level.....
Normal order.....



Signature of Issuing Officer

Date	Delivery or issue note	Quantity or Weight		Balance	Initial
		In	Out		
1	2	3	4	5	6

Reverse of Bin Card

Date	Delivery or issue note	Quantity or Weight		Balance	Initial
		In	Out		
1	2	3	4	5	6

Month.....

Date	S.R.B. No.	Store Sub-Head and Amount			REMARKS
		Code No.	Code No.	Code No.	
TOTAL					GRAND TOTAL

Store-Keeper

N-12
(Para 4.5.8)

FORM OF BILL REGISTER

Sl. No. of Bill	Purchase order No. and date	Bill No. & date	Name of firm	Amount			To whom sent	Signature of receiver
				Rs.	A.	P.		
1	2	3	4	5	6	7		

Date of receiving back	Voucher No. & date with which payment made	Amount paid	Remarks regarding reduction, etc.
8	9	10	11

NOTE:—Enter R.R. date-wise and mention date of receipt every day before the relevant entry

N-13
(Paras 4.7.4 and 4.7.5)

INDENT FOR STORES

Pages: To be machine numbered..... Book No.....
 Name of Indentor..... Indent No.....
 Name of Work..... Date.....
 Head of Account..... Date of Issue.....
 Name of Store..... S. I. B. No.....

Sl. No.	Description	Store Code No.	Quantity indented	Quantity issued	Rate per unit	Cost		REMARKS
1	2	3	4	5	6	7	8	9

Signature of indenting officer..... Authority approving the
 Approving authority..... issue.....
 Signature of person authorised to draw stores in token of receipt..... Issuing Officer.....

NOTE:—Col. 1 to 5 to be filled by indentor and other columns by Store Department.

N-14
(Para 4.7.6.)

STORE ISSUE BOOK

Book No. नवमो नयन Page No.

Date	Indent No. & Date	To whom issued	Particulars	Unit	Quantity	Rate	Amount
1	2	3	4	5	6	7	8

Account to be charged	Bin Card No.	REMARKS
9	10	11

N-15
(Para 4.7.7)

ABSTRACT OF ISSUE INDENTS

(By Section Holder)

Name of Division.....

Name of Works.....

Sl. No.	Date	Indent No.	Sub-head of Store and Amount			
			Code No.	Code No.	Code No.	Code No.

TOTAL

Store-Keeper

N-16
(Para 4.7.7)

ABSTRACT OF STORES ISSUED

*NAME OF DIVISION_____

Sl. No.	Head of Account	Name of work & sub-head	4	† Sub-head of Store and Amount								
				5	6	7	8	9	10	11	12	13

Total Amount	Storage	Grand Total	REMARKS
14	15	16	17

TOTAL

Store-Keeper

*Name of Division against whose indent the stores are issued.

† Arrange works by Major & Minor Heads of accounts and tally totals of each for use in appropriation accounts.

N-17
(Para 4.5.2)

STORE RETURN NOTE (RED COLOUR)

(*Quadruplicate*)

Returned to..... Book No.
Original account head..... Return Note No.....
Name of Division..... Date.....
Name of Sub-Division.....
Name of work debit to.....
Credit to.....

Sl. No.	Store Code No.	Description of articles	Original No. & Indent Date	Unit	Quantity returned
1	2	3	4	5	6

Quantity accepted	Rate per unit		Cost	REMARKS
	Rs.	A. P.		
7	8	9	10	

Returning Officer

Received by

Approving Authority

Approved by

Note:—Cols. 1 to 6 to be filled by Returning Authority and the remaining columns by Store Department.

N-18

(Para 4.8.1)

STORES PRICE LEDGER

Name of Article

Code No.

Unit of quantity	Maximum limit	Ordinary level	Normal order	Minimum limit	Location	Bin No. Sections
------------------	---------------	----------------	--------------	---------------	----------	------------------

Record of Orders Placed							Last re- viewed on
I	II	III	IV	V	VI	VII	
Order No.							Date
Date							Result
Quantity							Initials

Order		Suppliers' Bill		S.R.B. Indent	
No.	Date	No.	Date	No.	Date
1	2	3	4	5	6

From whom received or to whom issued	Receipts				
	Qty.	Rate	Value	Incidental	Total
7	8	9	10	11	12

Issue			Balance		Initials of Divisional Accountant	REMARKS
Qty.	Rate	Value	Qty.	Value		
13	14	15	16	17	18	19

N-19

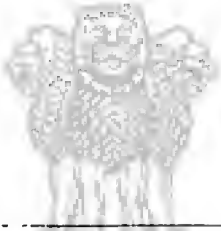
(Para 4.8.3)

DAILY STOCK VERIFICATION REPORT

Date.....

Serial No.	Particulars or description	Store Code No.	Unit	Reference to ledger folio
------------	----------------------------	----------------	------	---------------------------

Book balance	Ground balance	Discrepancy Surplus (+) Shortage (—)	REMARKS OR EXPLANATION
--------------	----------------	--	------------------------------

- 
1. Signature of Stock Verifier
 2. Signature of Store Inspector
 3. Signature of Store-Keeper

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N-20

(Para 4.8.3)

REGISTER OF PROGRAMME OF PHYSICAL VERIFICATION OF STORES

Store	Code No. of Store	Date of check				REMARKS
		1st Cycle	2nd Cycle	3rd Cycle	4th Cycle	
1	2	3	4	5	6	7

N-21
(Para 3.1.4.5.)

Card No.	Description of Works									Total hours
Foreman's Time-Card										
Date										
Shift										
	Code No.				**					
	Hours									
Badge No.	Amount									TOTAL
										Rate Amount

Foreman

Checked

TOTAL

Cost Engineer
Accountant

- * Foreman enters in these columns a brief description of each job worked on during the shifts showing (1) where the men worked and (2) what they did.
 ** Classification, Distribution No. or Code No. of accounts.

CHEECK SHEET

N-22
(App. V)

Cabin

Location

Dates

Ticket No.	IN	OUT	HRS.	IN	OUT	HRS.	IN	OUT	HRS.
1	2	3	4	5	6	7	8	9	10

IN	OUT	HRS.	IN	OUT	HRS.	IN	OUT	HRS.	IN	OUT	HRS.	REMARKS
11	12	13	14	15	16	17	18	19	20	21	22	23

Time-keeper

Checker/Computer

NOTE.—Reason for a workman not found at the time of check to be indicated.

N-23
(Para. App. V)

PAY ROLL

Group.....month.....year 19 Voucher No.....dated.....

Item No.	Token No.	Name	Shift	Designation	Name of Work	Name of Division
1	2	3	4	5	6	7

Dates

8

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Total	Rate	Amount	Deduction	Net due & paid	Token No.	Acknowledgement of payee	Dated initials of Cashier
9	10	11	12	13	14	15	16

TOTAL Rs.

नियमित रूप से Passed for Rs.

Certificate. -1. Certified that all persons for whom wages have been drawn in this bill were on duty during the periods shown against their names, each man being employed on the work and for the duties for which his appointment was sanctioned.

2. Certified that the wages of every person actually employed during the period have been claimed in this bill.

Divisional Accountant

Officer-in-Charge

ABSTRACT OF WORK

Name of work	Item No.	Amount
1	2	3

N-24
(Para 4.7.8.1)

TOOL CARD

No. & Name of Tool	Dates		Initials	REMARKS
	Issued	Returned		
1	2	3	4	5

N-25
(Para 5.27.2)

EQUIPMENT LEDGER

Article _____
Description _____
Accompanying tools and spares
detailed overleaf.....
Acquired from.....
Depreciation charge @.....
.....per.....

Cost.....
Freight.....
Other charges.....

TOTAL

Debits			Credits					
Major repairs and overhauls			Depreciation			Depreciation		
Month	Ref.	Amt.	Month	Ref.	Amt.	Month	Ref.	Amt.
1	2	3	4	5	6	7	8	9

Accompanying:—

Tools			Spares and Accessories	
Description	Quantity		Description	Quantity
1	2		3	4

Signature.....

EQUIPMENT TIMES

N-26
(Para 6.3.26)

Month.....19.....
Equipment.....
Equipment No.....
Use Rate Rs..... per hour

	Date	Account No.																Total per Hours	Mech. Delays	Idle Time	Total
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

N-27
(Para 5.29.3)

DAILY ISSUE OF MATERIALS AND STORES

Number of unit	H.S.D.	Petrol	Powerine	Lubricants				Spares
				30	40	90	140	
1	2	3	4	5	6	7	8	9

Foreman

Checked : Cost Engineer

Accountant

N-28
(Para 5.29.6)

DAILY REPORT FOR AUTOMOBILES

Lorry No. Dated.

Petrol In tank. Taken on date. Total. Consumed on

Diesel date. Balance in tank. Gallons.

Mobile taken on date.

Miles at start. at end. Miles run.

Miles per gallon of petrol/diesel.

Trip No.	Particulars of journey	From	To	Meter reading		Ordered by	Rate	Cost charged	Ac- count head
				Start	End				
								Rs.	

Foreman/Overseer

Checked
Cost Engineer

Accountant

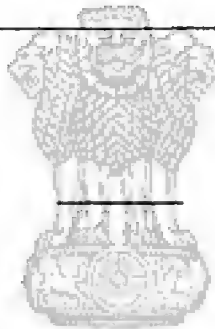
N-29
(Para 5.29.2)

DAILY OUTPUT REPORT (MACHINES)

Date.....

Shift.....

Serial No.	Unit No.	Account No.	Not operating hours	Output	REMARKS
---------------	-------------	----------------	------------------------	--------	---------



Foreman.....

Cost Engineer.....

Cost Accountant.....

N-30
(Para 6.3.30)

DAILY OUTPUT REPORT (Manual Labour)

Date.....

Name of Work.....

Item Code No.	Category of Labour	No. Employed	Output	REMARKS
------------------	--------------------------	--------------	--------	---------

Foreman/Overseer:.....

Cost Engineer.....

Cost Accountant.....

N-31
(Para 6.3.31)

MONTHLY PRODUCTION REPORT (MACHINERY)

Sheet.....of.....
Job.....Date.....

For the period.....of.....inclusive.

Amount	Item	Unit	Quantity this period	Total quantity to date	Probable final quantity
--------	------	------	-------------------------	------------------------------	----------------------------

Correct

Dated

Submitted

Date

Approved

Date

Foreman

Cost Engineer

Cost Accountant

N-32
(Para 5.29.9)

COST REPORT

Mass Concrete

**Item of Work*

1. Laying & Vibrating.
2. Formwork Erection.
3. Formwork Stripping.
4. Clean, Cure, Finish.
5. Reinforcements.

Shift No.

Block No.	Elevation	From	To	Location	Quantity
-----------	-----------	------	----	----------	----------

A. Equipment Used

Particulars	Nos. of job	Hours worked	Rate	Amount
-------------	-------------	--------------	------	--------

TOTAL

B. Labour

N-32--Contd.

[illegible]

C. Material

C'o.

TOTAL

Particulars	Unit	Quantity	Rate	Amount
			TOTAL (A.B.C.)	
			Rs.	
			Rate Rs.....	
			Per	

*All items other than one under report to be struck off.

Cost Engineer



N-33
(Para 5.6.1)

REVISÉD FORM FOR ESTIMATE

		Quantity Estimate			Cost Estimate			
Account No.	Item No.	Quantity	Unit	Rate Cost	Labour	Material	Plant and Equipment	TOTAL

Divisional Officer

WORK ABSTRACT

Name of Work.....

Authority.....

Head of Account.....

From what source posted		Final charges	Advance payments		Secured Advance		Other Transactions		Labour unpaid wages		TOTAL	
Brief particulars	Cash book vouchers or transfer entry book item No.											
1	2	3	4	5	6	7	8					
		Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.	Rs. As.
Estimate No.												
Expenditure to end of last month.												
(Month's transactions) Stock												
Total of month												
Total to end of month												

Note.—Posting made in the sub-divisional office should be in black ink and all postings and corrections made in the divisional office in red ink.

*Entries in the column should be made from Account 1 [Total (D) of Column (2) of Running Account Bill from A or B].

**In this column should be posted the total (E) of column (8) of Account II of Running Account Bill Form (B).

***This column is intended for all miscellaneous debits and credits to contractors awaiting settlement. The debits will usually consist of (1) Advances other than Secured Advance; (2) Payments made (under proper authority) to labourers and others on behalf of and by charges to the account of contractors; and (3) Issues to stock and other materials to contractors. This should be posted as *plus* entries from the vouchers or accounts as transactions take place. The credits will ordinarily be on account of amounts withheld, for future payment, from Running Accounts bills for work done. Such credits, as well as re-payments or amounts withheld, and recoveries of debits (1), (2) and (3) above, appear in Running Accounts Bill as Entry (G) of Memorandum of Payments, which should be posted in this column as a *plus* entry if *minus* or *vice versa*.

Unpaid amounts of muster-rolls should be posted in this column as *minus* entries. Subsequent payment of these arrears should be shown as *plus*.

† In the case of the Running Account Bills for work done the figure in this column should agree with entry (H) in the Memorandum of payments.

REFERENCE TO MEASUREMENTS*(A Reference to any Recorded Measurements should be entered here)***DETAIL OF CONTRACTOR'S CLOSING BALANCES**

Names of contractor	Reference to last running account bill		Closing Balances			Explanation of non-adjustment
			Advance Payments	Secured Advances	Other Transactions	
	Voucher					
	No.	Date				
1	2	3	4	5	6	7

TOTAL

The closing balance under the suspense head "Labourers" arrived at overleaf has been compared with the connected record of unpaid wages for work and found correct.

*The work is still in progress.



Divisional Officer
(Dated initials of sub-divnl.)

As a rule, reasons for delay should be recorded if an item is not cleared within three months. (*) If the work was completed during the month, the fact should be stated with an explanation of the steps taken to close the accounts of the work.

CERTIFICATE BY DIVISIONAL ACCOUNTANT

This abstract has been checked under my supervision. I have personally compared all the items in the "Detail of contractors' closing balance" with the contractors' Ledger and found them correct.

(Dated initials of Divisional Acctt.)

REMARKS BY DIVISIONAL OFFICER

(The Divisional Officer will note here whether he has examined the work, counted materials or checked measurements and makes and other remarks in respect of the execution of the work or the state of accounts as he may consider necessary.)

(Dated Initials of Divisional Officer)

REGISTER OF WORKS

Name of Work							
Authority							
Head of Account							
Estimate							
Appropriation for the year							
Months, etc.	Total value of work done	Advance payments	Secured Advance	Other Transactions	Unpaid wages	Total charges	Dated initials of Divisional Officer to transactions of month
1	2	3	4	5	6	7	8
Expenditure of previous years brought forward, if any							
April							
TOTAL							
May							
TOTAL							
June							
TOTAL							
July							
TOTAL							
August							
TOTAL							
September							
TOTAL							
October							
TOTAL							
November							
TOTAL							
December							
TOTAL							
January							
TOTAL							
February							
TOTAL							
March							
TOTAL							
March Supply							
TOTAL							

Carried over to page — of next year's register.

N-36

(Paras 2.4.14 & 6.3.36)

SUB-STORE REGISTER FOR SITE OF WORKS

Name of work

Serial No.	Name of Item	Code No.	Open- ing balance	Receipts						TOTAL
				Apr.	May	June	July	Aug.	Sept.	
				Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
1	2	3	4	5	6	7	8	9	10	11

Issues						TOTAL	Balance	REMARKS
Apr.	May	June	July	Aug.	Sept.			
Oct.	Nov.	Dec.	Jan.	Feb.	Mar.			
12	13	14	15	16	17	18	19	20

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N-37

(Para 5.29.4)

DAILY FIELD REPAIRS

Section	Shift	Date
Machine No.	Repairs carried out and part used	REMARKS

Foreman

N-38
(Para 5.29.5)

DAILY ACCIDENT/BREAKDOWN REPORT

For Mech. Equipment

A	B	C
OPERATOR	WING DEPARTMENT	EQUIPMENT PARTI- CULARS Make Serial No. Model Regd. No.
D	E	F
OPERATING CONDITIONS Attachments installed at time of accident.	Precise time of accident/ breakdown.	Location of machine.
Type Make Serial No.	Name of supervisor present at breakdown.	Job on which machine was working.
G	H	
DESCRIPTION OF OCCURRENCE (Here state as fully as possible all condi- tions under which machine was operating—speed, load, lubricant, pressure, etc.)	Apparent damage to the machine. (Greatest details possible).	
Was injury sustained by Operator? If Operator was injured, give details below.	Yes/No	If persons other than operator were injured, give names and addresses and details of injuries below.

N-39
(Para 5.29.8)

DAILY CONCRETE REPORT

Mass Concrete

Progress.....Cu. Yds.	Target Quantity..... Cu. Yds.		
Concrete This Month (cu. yds.)	Total Cement (tons)	Total Sand (tons)	Total Rock (tons)
Beginning of Shift ..			
This shift ..			
End of Shift ..			

N-39—*contd.*

Mix	Location Placed	Batches	W/C	Cement	Water	Pozzo- lana	Sand-
1	2	3	4	5	6	7	8

*Date**Shift*

Rock				Cu. yds per batch	Cu. yds. total
Fine	Medium	Coarse	Cobbles		

SHIFT TOTAL

To

Engineer incharge of Shift/ *नवागमन नयन*

APPENDIX V

TIME-KEEPING SYSTEM FOR WORK-CHARGED STAFF AND LABOUR EMPLOYED ON LARGE RIVER VALLEY PROJECTS

PRELIMINARY

This memorandum gives an outline of the new system of Time Keeping proposed to be enforced on large River Valley Projects for labourers and work-charged establishment employed on them.

DIFFICULTIES ENCOUNTERED IN THE PRESENT SYSTEM

Following main difficulties are experienced in the present system :—

1. Delay in preparation of Pay Rolls

After the last day of the month, another five days are taken in preparing the rolls and the S.D.O.'s checking the allocations. After that the Divisional Officer checks the rolls against sanctions which are sometimes not forthcoming, the references naturally take a lot of time.

2. Late Receipt of Intimation Memos and subsequent References by Overseers/Foremen about the Employment of Workmen

The memos communicating appointment etc. are generally received late and these have, therefore, to be chased. Further, chits are often received from the Overseers or Foremen that certain workmen had been employed by them for a number of days but they had not been marked present by Time-Keepers. If, therefore, such men are not paid, it causes hardship to them and if the Time-Keeper subsequently marks them present, it is against the very basis of Time Keeping.

3. Difficulty in Accounting of Changes in Shifts

If a workman changes from one shift to another, as it happens quite often, the Time-Keeper of the second shift cannot mark that person 'present' because his name does not exist in his register. The intimation of change of shift is not given by the Overseer or Foreman in time and the workman, for no fault of his, cannot be marked present. This leads to a number of complaints each one of which has to be gone into at site. Similar is the case when a workman changes from one work or cabin to another.

4. Delay in Payment

As already explained in para 1, it takes considerable time in preparing, checking and passing of Rolls. Thereafter, the workmen are paid according to certain programme, but the greatest difficulty is experienced in case of unpaid persons, as subsequent location of unpaid amount takes time.

REMEDIES AND THE NEW SYSTEM

After studying the system of Time Keeping and Accounting, as given in the book "Construction Cost Control" by the American Society of Civil Engineers a new system has been devised, which overcomes all the difficulties enumerated in the above paragraphs.

FOREMAN'S CARD

Briefly, the new system starts with the Overseer or Foreman. This is the only proper way as the whole thing should emanate from the side of work and from the person in charge of the work. It is now proposed that the Overseer or Foreman will fill up Daily Time Card (Form No. N-21) which will show details of each person actually employed on a day by him and name of work. The card will be signed by the Sub-Divisional Officer or Foreman in charge of the work. This card will be deposited by him at the end of the shift with the Time-Keeper. The Time-Keeper will not initiate the original record to form the basis of the pay rolls but will only check the details of persons marked present by the Overseer or Foreman on the Card from Form N-22 of Daily Check Sheet which he will fill up daily and will also record the checks that he exercises during the day. These checks should normally be three in number, i.e., 'IN' when workman takes the brass ticket at beginning of the shift, 'OUT' when the brass ticket is returned at the end of the shift and one 'FIELD' check carried out by him during the day. There is no need for the Time-Keeper to be present at the Cabin after two hours of the start of a shift, as no workman is admitted for work if he is late by more than two hours. He can, therefore, utilise his time for the 'field' check till one hour before the end of the shift. The Time cards and the check sheet should be reconciled with each other day to day, pay roll posted and at the end of the wage period the pay roll in form N-23 should be completed.

PAYMENTS TO WORKMEN

The pay roll should be ready on the second day of the following wage period but its completion, checking and passing will perhaps take another one or two days. The payment can, therefore, start on the 4th day according to a pre-planned programme announced in advance to the workmen. It is proposed to open 'Pay Windows' or 'Pay Stations' for the labour at suitable sites for payments within three or four days so as to complete all the payments within the first seven days. Each pay station or window will be manned by an Accounts Clerk/S.D.C. and one Assistant Clerk, who will assist him in making payments. These temporary 'Pay Stations' will be required, for a few days only and on the remaining days, regular Cashier will continue to make payments as before. Each group will be given a fixed amount of advance amounting to the total shown in the pay roll given to him for disbursement, and the same will be accounted for by the persons concerned at the end of the day.

IDENTITY CARDS

The payments to workmen will be made without any attestation by Overseers or Foremen. Each workman will be required to bring his identity card containing his photograph on pay day and the cashier will verify the workman from his photograph on the Identity Card. The identity card which will be supplied at Government cost will be machine-numbered.

POSTING OF CASH BOOKS

The Cashier will advance to each Assistant/Cashier/Clerk a suitable amount to cover his 'days' payments and each Cashier will prepare a daily pay scroll at the time of the actual payment. At the end of the day, he will total this scroll and reconcile the balance left with him as unpaid. He will render the daily pay scroll *plus* the unspent balance to the Cashier and thus a lot of time of the Cashiers, which they now spend in splitting up payments by works and writing the Imprest Account, will be saved and the same time can be made available for making payments to the other Establishment. The daily pay scroll will be entered into the Cash Book by the Head Cashier as one item showing the particular Cashier and the payment made by him.

GENERAL

Each workman will be equipped with an Identity Card, and a Brass Ticket. Their record will be kept in registers in Forms T/K-5 and T/K-6 which will be maintained in time office. The requisitions for labour will be sent by the Indenting Officer in Form T/K-1. The appointment card will be issued by Employment Officer in Form No. T/K-2; if any workman's pay is raised or he is promoted or discharged, its intimation will be notified by an office order and copies sent to all concerned. If any workman leaves the work, he will do so only after securing a Gate Pass in Form No. T/K-7 from his immediate officer. In cases of persons discharged a 'No Demand Certificate' in form T/K-10 should be insisted upon before his wages are paid and also a release order in Form T/K-11 obtained.

TIME KEEPING SYSTEM FOR WORK-CHARGED STAFF AND LABOUR EMPLOYED ON LARGE RIVER VALLEY PROJECTS

1. General

This system is proposed to start *from the site of work and from the person in charge of it*. The following procedure is recommended in this connection.

2. Requisition and Employment

There should be an 'Employment Section' under an Employment or Labour Officer on whom should be placed by S.D.O., well in advance all requisitions in duplicate for labour employed in form No. T/K-1.

On appointment the man should be given appointment card in Form No. T/K-2, his particulars entered in a service register in form T/K-3 and directed to the officer concerned.

3. Issue of Identity Card and Badge No.

The S.D.O. or the Requisition Officer, will fill up Part II of the Appointment Card and direct the man to report to the time office. The Time Office will retain the Appointment Card and issue him an Identity Card in form No. T/K-4 and also a metal disc containing his Badge No. The record of identity cards and metal disc issues should be maintained in Form Nos. T/K-5 and T/K-6 respectively.

4. Promotion and/or Change of Rate of Pay, Transfer, Discharge

These facts should be notified by an office order, copies of which should be sent to all concerned for note and necessary action.

5. Foreman's Time Card

Each Foreman/Overseer should be required to maintain a Time Card in form N-21. Time for late comers and early quitters should be noted and time cards numbered daily starting with Sl. 1.

6. No workman should be allowed to go out without a Gate Pass in form T/K-7 signed by an officer not below the rank of a Foreman/Overseer. If necessary the wages should be proportionately disallowed.

7. The labour employed should be frequently checked by a senior officer who should initial the card in token thereof. This card, N-21, should be signed by the officer in charge of the work.

8. The maintenance of this Card must be entrusted to Foreman/Overseer and should, on no account, be passed on to a non-technical man. It is imperative that it should be maintained by a technical hand in charge of the work.

9. Daily Check Sheet

Daily check sheet (Form N-22) should be maintained by the Time-Keeper in duplicate by carbon process in indelible ink or copying pencil. A man entering "In" or going "Out" at the commencement or at the close of the shift should be marked 'P' in the respective column, noting time in case of late starter or early quitters. Absence of persons should be indicated by 'A'. The duplicate copy of the sheet of pay roll should be passed on to Accounts Section for check of Pay Roll. At the close of the shift the foreman's Time Cards should be collected and sent to the Time Office where the daily check sheets should be reconciled with these and pay rolls posted day to day.

10. Pay Roll (Form N-23)

The completion of this form depends on the frequency of payments required to be made and should, therefore, be prepared for such payment periods. This form should be posted day to day, from the foreman's Time

Card after check and reconciliation with Daily Check Sheet. Name of work will be taken from the Time Card and total number of days worked will be calculated at the end of the payment period. The Time Office will fill in the wage rate from the Appointment Card. Each sheet of pay roll should be machine numbered and each roll assigned a book number.

11. Any change of work during a month should be indicated by a short red ink line in the attendance col. and the name of new work written in the col. "Name of work" below the name of work originally written in that col. At the time of preparing the abstract at the end of "Payment Period" wages earned will be divided over different works in the direct ratio to the number of days worked on each work.

12. Pay roll after payment should be recorded in the Cash Office.

13. Unpaid item should be abstracted in register of unpaid wages.

14. For payments to workmen, in case of rush, two or three payment windows can be created temporarily manned by an accounts clerk with one assistant. Each group will be given a fixed amount of advance amounting to the total of the roll given to it for disbursement and should be accounted for at the end of the day. On the remaining days the cashier can continue to make payment as usual.

15. Before the Roll is passed, it should be checked by the Divisional Accountant, and its reconciliation affected as below.

16. Labour Distribution Summary

This will be prepared in form T/K-8 after the Time Cards have been checked against Time Check Sheet and Pay Roll has been prepared and reconciled accumulating labour cost shown on Time Card. After completion it should be scrutinised and signed by the Divisional Accountant.

17. Monthly Reconciliation Statement

This will be prepared in form T/K-9 after completion of form T/K-8 and signed by the Divisional Accountant.

18. No Demand Certificate

Each quitter will be required to produce a "No Demand Certificate" in form T/K-10 from the Officer under whom he is employed before final settlement of his accounts is effected.

19. Pay Release Order

On receipt of "No Demand Certificate", "Pay Release Order" in form T/K-11 should be issued by the S.D.O. This order should be posted on the Pay Roll by the Cashier.

20 Payment of Arrears

Payment of arrears relating to the preceding month or months should be made on the form of Hand Receipt prepared by Time Office/Cash Section and passed by S.D.O.

21. Payment to workers should in no case be held up for any reason or for want of or immediate sanction etc. A man who has been employed at an agreed rate is entitled to payment at that rate and payment of his wages should not therefore be held up unless it becomes necessary for want of a "No Demand Certificate".

As a matter of fact no man should be employed without prior sanction and if any such appointment has been necessitated by emergency requisite sanction of the competent authority should be obtained without delay.



List of the Time Keeping Forms

Description	No. of Form
Requisition for Labour	T/K-1
Appointment Card	T/K-2
Service Register	T/K-3
Identity Card	T/K-4
Register of Identity Cards	T/K-5
Register of Brass Tickets	T/K-6
Time Card	N-21
Gate Pass	T/K-7
Daily Check Sheet	N-22
Pay Roll	N-23
Labour Distribution Summary	T/K-8
Monthly Reconciliation Statement	T/K-9
No Demand Certificate	T/K-10
Pay Release Order	T/K-11

NOTE :—For forms of 'N' series see App. IV.

T/K-1

REQUISITION FOR LABOUR

Division_____

Sub Division. _____

To

The Employment Officer

Please arrange for the following work-charged establishment, and labour.

Work for which required	Designation	Qualifications & Experience required (Essential and preferable.)	Number	Period	Date when reqd.	Date when recruited/joined
(1)	(2)	(3)	(4)	(5)	(6)	(7)

NOTE:—(1) Date of recruitment will be filled by Employment Section and that of joining by Indenting Officer.

(2) Where No. in Col. 4 is more than one, entries in Cols. 6 & 7 should be separately shown in respect of each workman.

*Indenting Officer**Employment Officer*

APPOINTMENT CARD**PART I**

Reference your Requisition No. _____
 dated _____ Shri _____ S/o _____
 _____ has been appointed as _____ with
 effect from the date he joins work, at Rs. _____
 in the scale of Rs. _____ plus usual allowances.

Employment Officer

PART II

His pay is chargeable to the work of _____
 sanctioned vide No. _____ dated _____ for which
 an estimate has been submitted/is under preparation.

He is to call at _____ Time Cabin and report to Foreman
 Overseer _____ for work.

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Sub-Divisional Officer

PART III

Time Office

Assigned :—

1. Identity Card No. _____
2. Ticket No. _____
3. Badge given by _____
4. Noted by _____
5. Record _____

Signature _____

Designation _____

SERVICE CARD**PART 'A'**

Serial No. _____

Name _____

Father's Name _____ District _____

Province _____

Date of Birth _____

Address _____

Designation _____

Date of Appointment _____

Rate of Pay _____

Remarks _____

PHOTOGRAPH*Signature of Officer Incharge***PART 'B'**

Year	Remarks	Signature of Reporting Officer
(1)	(2)	(3)

IDENTITY CARD

No.

Name Male Married

..... Female Unmarried

Father's
Husband's Name

Village

District

State

Date of employment.....

Badge No.

Category

PHOTOGRAPH

PHOTOGRAPH

**Signature or
Thumb Impression**

Signature of Employment Officer



T/K-5

REGISTER OF IDENTITY CARDS

Identity Card No.	Date of Issue	Name & Parentage	Ticket No.	Initials of Issuing Officer	Remarks
(1)	(2)	(3)	(4)	(5)	(6)

T/K-6

REGISTER OF BRASS TICKETS

Ticket No.	Date of Issue	Name, Parentage & Address	Identity Card No.
(1)	(2)	(3)	(4)

Signature or Thumb Impression	Initials of Issuing Officer	Remarks
(5)	(6)	(7)



T/K-7

To

The Gate-Keeper,

Please pass out.

Name _____ of _____ Shop

and note that he left work at _____

REASONS FOR LEAVING _____

Foreman

Time of leaving _____

Time of returning _____

Noted _____

Time-Keeper

T/K-8

LABOUR DISTRIBUTION SUMMARY

Name of work No.....
 Division
 Month.....19 Sub-Division

Sheet No.	Amount	Sheet No.	Amount	Sheet No.	Amount	Sheet No.	Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

C/o C/o C/o

Accountant
Cost Section

T/K-9

MONTHLY RECONCILIATION STATEMENT

Division....., Month.....19

L.D.No.	Amount	L.D.No.	Amount	L.D.No.	Amount	L.D.No.	Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

L.D.—Labour Distribution

Accountant
Cost Section

T/K-10

NO DEMAND CERTIFICATE

(i) Shri _____ Ticket No. _____ has handed over all articles of stores or liveries etc., under his charge and the token supplied to him.

(ii) Notice of ten days was given by him and expired on _____ / no notice was required to be given by him/ _____ was given or the notice was short by _____ days.

(iii) He has vacated Government residential building.

(iv) He has paid all electric charges upto date.

(v) There is nothing outstanding against him for recovery now.

Officer _____

Designation _____

**PAY RELEASE ORDER**

T/K-11

To

The Cashier,

Please release pay of Shri _____

Ticket No. _____. He has produced 'No Demand Certificate'. Amount to be deducted from his pay is Nil/Rs. _____ as per detail below :—

Detail of amount to be recovered :—

Particulars.	Amount	
	Rs.	As
1. Stores, Liveries, etc.
2. _____ days wages for failure to give notice
3. Electric or meter charges
4. Rent
5. Misc. Recovery, if any

Accountant

Officer _____
Designation _____

APPENDIX VI

Copy of letter No. 4486-TC, dated the 19-9-1955 from the Assistant Director, Traffic, Railway Board, Government of India, Ministry of Railways (Railway Board), New Delhi, addressed to the General Manager, Indian Railways and copy to the Ministry of Irrigation and Power (Rates and Costs Committee) with reference to their letter No. RCC/87/55, dated 18/20-5-55, and etc.

SUBJECT :—*Payment of Freight Charges by Civil Departments of the Government by cheques.*

At present all Civil Departments of the Government are permitted to make payment of freight charges by means of Civil Credit Notes in terms of para 2135-T. It has been requested by certain Departments that they may be permitted to pay railway dues by means of cheques which system in their view ensures more expeditious settlement of transactions as compared to the existing Credit Note System.

2. In view of the introduction of a system of settlement of transactions between the Railways and the Pay & Accounts Offices, Works, Housing & Supply Ministry and Food & Agriculture Ministry on cash basis with effect from April, 1955, the Board have no objection to the facility of payment by cheque being granted to such of the Civil Departments of the Central as well as the State Governments as may ask for it. They, however, desire that a detailed and fool-proof system which would completely eliminate any fraudulent manipulation of cheques issued by the Civil Departments, should be laid down for the guidance of the staff both at the stations as well as in the Accounts Offices in consultation with your F.A. and C.A.O. before introducing the system of payment by cheques. A copy of the instructions framed in this connection may be furnished to the Board for their information.



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